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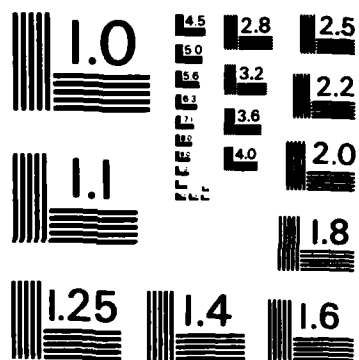
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NATO's THEATER NUCLEAR FORCES:

A Coherent Strategy for the 1980s

JEAN D. REED

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**NATO's
THEATER NUCLEAR FORCES**

**A Coherent Strategy
for the 1980s**

by

**Colonel Jean D. Reed, USA
Senior Research Fellow**

National Security Affairs Monograph Series 83-8

1983

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FOREWORD

With the passage of time, the role of nuclear weapons in NATO defense strategy has changed significantly. In the 1950s, a powerfully armed United States thrust a nuclear shield between its Western European Allies and the Soviet threat to the east. By the 1980s, however, the doctrine of "massive retaliation" has evolved into one of "flexible response." Now that the Soviet Union has reached parity with the West in strategic forces, NATO's theater nuclear strategy has emerged as a critical issue.

Although deterrence remains the goal of NATO defense policy, the current configuration of NATO's triad of conventional, theater nuclear, and strategic nuclear forces may not be adequate to maintain the peace. In this National Security Affairs monograph, Colonel Jean D. Reed, US Army, focuses on theater nuclear forces, recommending changes in their configuration to support changes in conventional and strategic forces. In calling for clarification of the conditions which would justify initial use of theater nuclear weapons, he proposes an explicit linking of conventional and theater forces with strategic forces. The adoption of these proposals would allow a restatement of flexible response and enhance deterrence.

The National Defense University is pleased to publish Colonel Reed's analysis, which should contribute to a clearer, more credible NATO defense strategy.



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Colonel Jean D. Reed, US Army, wrote this monograph while a Senior Research Fellow with the National Defense University and concurrently a student at the National War College. He is a graduate of the University of Oklahoma and the US Army War College and holds a master's degree in physics from the University of Oklahoma and the Master of Military Arts and Science degree from the US Army Command and General Staff College. He has also done postgraduate work in physics at Georgetown University. Colonel Reed's most recent assignments have involved management of the Tank Breaker, Advanced Indirect Fire System, and Assault Breaker technology development programs while at the Defense Advanced Research Projects Agency; command of a nuclear-capable field artillery battalion at Fort Bragg, North Carolina; and service on the Army Staff in the Nuclear Division of the Office of the Deputy Chief of Staff for Operations and Plans. He has published articles in the *Field Artillery Journal* and has presented papers before the American Defense Preparedness Association, The American Institute of Aeronautics and Astronautics, and the Technology Transfer Society. Colonel Reed is currently serving as Deputy Commander, VII Corps Artillery in the United States Army, Europe.

PROLOGUE

A DILEMMA FOR THE ALLIANCE

For over 30 years nuclear weapons have been an integral part of NATO's strategy for the defense of Western Europe against an attack by the Soviet Union and the Warsaw Pact. For over 30 years that attack has not occurred. Even though relations between the Western Allies and the Soviet Union and its allies have often been strained as the international situation has oscillated from the conditions of the Cold War to those of detente, Europe has been at peace. Surely, the existence of nuclear weapons in NATO's forces and the threat they pose to the Soviet Union have had a major role in maintaining peace in Europe and between the superpowers, Russia and the United States.

Recent events, however, challenge the place of nuclear weapons in NATO's strategy and the premise upon which the Alliance was founded: that an attack upon one would be regarded as an attack upon all to which the member states of NATO could be expected to respond.¹ The increase in Soviet strategic nuclear forces to a point of parity, or in some cases superiority, relative to those of the United States has led many to question the credibility of the US nuclear guarantee which has been the keystone of the defense of Western Europe for so many years. Since the Soviet Union could retaliate against the United States with devastating effect if NATO used nuclear weapons against a Soviet/Warsaw Pact attack in Europe, could the United States be expected to initiate the use of nu-

clear weapons in a conflict in Europe and risk destruction of the United States homeland in order to halt the Soviet attack?

Statements by prominent US statesmen heighten the concern of US allies about the credibility of the US strategic commitment. In September 1979, Henry Kissinger, former Secretary of State, jolted the Europeans during a speech in Brussels by declaring:

And therefore I would say—what I might not say in office—that our European allies should not keep asking us to multiply strategic assurances that we cannot possibly mean or if we do mean we should not want to execute because if we do execute we risk the destruction of civilization.²

More recently other challenges have been raised. In April 1982, McGeorge Bundy, George F. Kennan, Robert McNamara, and Gerard Smith, who are regarded by many as the American architects of the NATO strategy of flexible response, proposed that the Alliance adopt a new policy: "That nuclear weapons will not be used unless an aggressor should use them first."³ Should, however, the United States and the Soviet Union agree that neither would be the first to use nuclear weapons, what would deter an attack on the weaker conventional forces of NATO by the numerically superior conventional forces of the Warsaw Pact? In reply to the proposal of the four former US officials, Secretary of State Alexander Haig said:

A no-first-use doctrine would destroy the very credibility of the Western strategy of deterrence and leave the West nothing with which to counterbalance the Soviet conventional advantages and geopolitical position in Europe. . . . In failing to maintain deterrence we would risk our own freedoms while actually increasing the likelihood of also suffering nuclear devastation.⁴

Other questions date from the earliest arguments over the development of NATO and US strategy: For instance, should the Alliance rely upon conventional forces for the defense of Western Europe? Or, how can theater nuclear weapons be re-

garded as a viable part of NATO's strategy if their use will result in the destruction of Western Europe? Indeed, probably more uncertainty and ambiguity center on the role of theater nuclear weapons in NATO's nuclear strategy than on any other element.

As one element of NATO's triad of conventional, theater nuclear, and strategic nuclear forces, in principle the theater nuclear forces contribute to the ability of the Alliance to execute its strategy of flexible response. Views differ among the allies, however, and among US strategists themselves about what role theater nuclear forces should play in the NATO strategy. Do theater nuclear forces exist simply for their deterrent value or should they represent a real warfighting capability; what are the conditions under which theater nuclear weapons might be employed and what would be the tactical doctrine for that employment; and what should be the composition of theater nuclear forces and programs for their modernization?

To the European allies of the United States, for example, long-range theater nuclear forces provide evidence of the coupling of theater nuclear war in Europe to a strategic nuclear exchange between the United States and the Soviet Union, and are thus an element of deterrence. At the same time, European members of NATO are deeply concerned about the modernization of short-range and mid-range theater nuclear weapons which might provide the opportunity in any conflict with the Warsaw Pact to limit the use of nuclear weapons to the theater—a situation which might be more desirable to some in the United States. In the mid-1970s, the United States proposed such a program for modernizing the majority of NATO's theater nuclear forces and increasing the capacity of NATO's conventional forces to counter the buildup in Warsaw Pact forces.

The "neutron bomb" controversy severely affected plans for modernization of short-range theater nuclear weapons. Even though the United States eventually decided to produce and stockpile enhanced radiation weapons, the deployment of

these weapons to Europe remains a contentious issue. In 1979 the NATO Allies agreed to a modernization program for long-range theater nuclear forces. This program, too, became a victim of disagreements within the Alliance over the role of theater nuclear forces. In 1982 the willingness or political ability of several of the Western European allies of the United States to fulfill their portion of the NATO agreement, particularly in the face of popular unrest and demonstrations against nuclear weapons, remained in doubt.

Intimately related to the role of theater nuclear weapons, and to the entire US strategic nuclear strategy as well, is the question of whether any possibility exists for controlling escalation. Escalation control was implicit in the US strategic nuclear doctrine for limited or selective nuclear response developed in the early 1970s during the Nixon and Ford administrations, a factor which led to the countervailing strategy codified in Presidential Directive 59 under President Carter. As Soviet President Leonid Brezhnev has stated, however, "There can be no limited nuclear war. If a nuclear war breaks out, whether it be in Europe or in any other place, it would inevitably and unavoidably assume a worldwide character."⁵ Many others feel that once the so-called firebreak between conventional and nuclear warfare has been breached, the conflict will inevitably escalate to a central strategic exchange.

Controversy over differing views on the role of theater nuclear forces in the NATO strategy of flexible response and of the ability to control escalation contributes to the perception of disunity within the Alliance. To the extent that such controversies remain unanswered or conditions which gave them rise remain unchanged, they challenge the unity of NATO and the collective and individual security of the nations of the Western Alliance. From time to time since the formation of the Alliance, alternatives have been advanced which might provide an answer to one or more questions and a basis for change. Indeed, the development of these alternatives and arguments about the efficacy of each have been the chief occupation of a host of strategists in the United States and Europe for over 30 years.

In these arguments the benefits ascribed to one alternative by its proponents have been challenged with disadvantages cited by those who would detract from the alternative. One of the questions already stated may be used as an example:

Proponent: In the defense of Western Europe, theater nuclear weapons should be regarded as a means of redressing the imbalance in conventional forces between NATO and the Warsaw Pact and should be used as an integral part of the warfighting capability of NATO.

Opponent: But how can we even consider using theater nuclear weapons in the defense of Western Europe, since their use will result in the ultimate destruction of that which we are attempting to defend?

Herein lies the dilemma for NATO: How, short of war, to answer the questions? How to formulate NATO's strategy and then implement it so as to enhance the capability of the Atlantic Alliance to deter Soviet aggression in Europe and to defend Western Europe should deterrence fail?

The answer to such questions lies in NATO's existing strategy of flexible response; in renewed recognition by the members of the Alliance of the individual role played in deterrence, defense, and escalation control by each element of the NATO triad of forces; and in how the role of each element of the triad relates to the roles of the others. The problem that has existed in the past has been the tendency to view each element of the triad separately and to propose solutions regarding one element of the triad without regard to the effect upon or contribution provided by the other elements of the triad. I believe that NATO's strategy of flexible response still provides the basis for the unity of the Alliance, for deterrence of Soviet aggression, and for the defense of Europe and argue that changes in application of that strategy and in the force structure which supports it can be made which will make the strategy more effective and deterrence more assured.

The chapters which follow develop the arguments in this light. Chapter 1 reviews the development of NATO's strategy, from "massive retaliation" in the 1950s to "flexible response" in the 1980s, and the relationships among the separate elements of the NATO triad. Chapter 2 examines NATO's flexible response strategy, the requirements for credible deterrence, and the role of each element of the NATO triad in establishing a credible deterrent. It summarizes the role of theater nuclear forces in the flexible response strategy, then closes with a discussion of escalation control. Chapter 3 relates those changes in conventional and strategic nuclear forces which must be made in concert with changes proposed for theater nuclear forces to enhance the overall effectiveness of the flexible response strategy. The chapter ends with some personal thoughts on strategy and deterrence. Selected acronyms used in the text are listed in the glossary.

1. NATO's NUCLEAR STRATEGY— A SEARCH FOR MEANING

THE 1950s—MASSIVE RETALIATION: DETERRENCE THROUGH THREAT OF PUNISHMENT

NATO was created in 1949 for one basic purpose: to provide security for its member nations against aggression. From the inception of the Alliance, strategic nuclear weapons were considered an integral part of the military capability of the Alliance. At the Lisbon Conference in February 1952 the partners in the Alliance faced their inability and unwillingness to pay the economic and personnel costs required to field the approximately 100 divisions and 9,000 aircraft regarded as necessary to provide a feasible conventional defense against an attack by the Soviet Union.

In concert the Alliance turned to a strategy of primary reliance on nuclear weapons to defend Europe from the outset of any conflict. The threat to punish the Soviet Union with massive retaliation against the Soviet homeland from the strategic nuclear forces of the United States would deter a Soviet conventional attack in Europe or elsewhere. Conventional forces of the European NATO Allies and of the United States were deployed forward in Europe to guard against an inadvertent war, to defend against a Soviet-initiated, limited-objective attack and to serve as a "trip wire" to define any aggression clearly and trigger the employment of both strategic and theater nuclear weapons by NATO. Conventional forces, which were accepted as being militarily inferior to those of the Warsaw Pact, would be prepared to use theater nuclear weap-

ons if the Soviets attempted to broaden a limited-objective attack. Theater nuclear weapons would make up for the deficiencies in conventional forces and provide the capability for punishing Soviet and Warsaw Pact military targets within the theater. Under a condition of a virtual US nuclear monopoly, first use of nuclear weapons by the United States and the Alliance was implicit. If deterrence failed, the NATO nuclear capability would be used immediately to defend NATO as far forward as possible and maintain the integrity of NATO territory.¹

Although the Allies were in agreement about the strategy, misgivings began to develop in the late 1950s about the potential effects of the use of tactical or theater nuclear weapons in a conflict in Europe. The results of Exercise Carte Blanche indicated that a nuclear war in Europe might result in more than five million casualties.² The Europeans could not accept such a thought. Unacceptable too was the thought of any extended conflict in Europe involving conventional forces which might repeat the horrors of World War II in devastation and loss of life. For these reasons, the Europeans preferred a strategy which achieved deterrence through the threat of immediate escalation to the use of strategic forces of the United States against the Soviet homeland.

In the preferred scenario, any attack by the Soviet Union against NATO would be met by the trip wire of NATO's conventional forces, and then a massive strategic attack would be fired against the Soviet Union by the United States and Britain and France, the other NATO nuclear Allies, over the heads of the people of Western Europe and on the Eastern European and Soviet homelands. As long as the NATO nuclear monopoly persisted and there was no possibility of return fire from the Soviet Union, this scenario was also acceptable to the United States.

As early as 1952, however, the efficacy of NATO's strategic deterrent and the US nuclear umbrella as a response to conventional attack was questioned. With the development of the Soviet strategic nuclear capability and the threat it posed

the United States, could the United States be expected to employ its strategic nuclear forces "except in response to a nuclear assault upon the United States or, possibly, nuclear strikes against US Allies?"³ As the Soviet nuclear capability increased in the late 1950s and the early 1960s, the effectiveness of the United States and of NATO's strategy of massive retaliation as a deterrent to either nuclear or conventional attack came more and more into question.

THE 1960s—FLEXIBLE RESPONSE: DETERRENCE THROUGH UNCERTAINTY

In 1957 in *Nuclear Weapons and Foreign Policy*, Henry Kissinger, then a Harvard professor of government, had written that war was unthinkable on a total basis at the nuclear level and that national decisionmakers would never exercise the option of massive retaliation. Kissinger scorned a doctrine that left no room for intermediate positions between total peace and total war and pointed out how vulnerable such a doctrine left us to the preferred form of Soviet aggression: internal subversion and limited war.⁴ President John F. Kennedy picked up this theme.

From the outset of his administration, President Kennedy and his Secretary of Defense, Robert McNamara, were concerned with what they saw as the inflexibility of the Eisenhower administration's reliance on the threat of nuclear retaliation, and with that administration's failure to provide for or recognize any option between the most limited conventional probe and a resort to rapidly escalating nuclear warfare. In response to any significant level of Soviet aggression, the strategy of massive retaliation prescribed an essentially automatic response which could not be amenable to further control or direction with any degree of certainty.⁵

To meet the wide range of potential threats faced by the West, Secretary McNamara argued for multiple balanced capabilities, each possessing a high level of effectiveness and subject to careful, continuing control. For the new administra-

tion, strategic nuclear forces would achieve deterrence through a counterforce strategy: the capability, even in the face of a massive surprise attack, to execute a second strike against an enemy's military forces, rather than seeking the mass destruction of cities and civilian populations. Later, faced with uncertainties in the survivability of US retaliatory forces, McNamara retreated from the counterforce strategy to an intermediate position between counterforce and the indiscriminate, city-wrecking implications of the earlier strategy of massive retaliation. In a strategy of "assured destruction" the United States would maintain the capacity to inflict unacceptable damage upon an enemy who had launched a full-scale attack.⁶ In accordance with Henry Kissinger's views, the risk out of proportion to any gain would deter an adversary's attack.⁷

Both President Kennedy and his Secretary of Defense argued for stronger conventional forces. The leaders of the new administration believed that the tactical nuclear capabilities of the American armed forces should be maintained and further developed, but as the Soviet nuclear capability increased, they felt little confidence in keeping localized a war in which tactical nuclear weapons would be employed. Limited local wars should be fought with conventional weapons, or the danger would become too great that the war would not remain limited and local.⁸ From the outset, in considering this American strategy of flexible response, the Kennedy administration had serious reservations about the utility of tactical nuclear weapons. The primary emphasis of the administration's strategy would be on the warfighting capability of conventional forces.

These views were in sharp contrast to those of the Western European Allies. As characterized by the German view, the primary mission of the NATO Alliance was deterrence based on the threat of general war should Western Europe be attacked. Although they regarded the probability of an attack by the Russians as low, it would remain low only if American nuclear capabilities—strategic and tactical—were inextricably involved in the defense of Europe. One authority on the European nuclear debate during the 1960s wrote, "Public accept-

ance by Europeans of the concept of a limited war fought in Europe with nuclear or conventional forces that were somehow separated from the strategic retaliatory power of the United States would not only undermine the deterrence system, but would also admit the unfrontable: repetition of World War II."⁹

Resolution of these contradictory views on the defense of Europe was to occupy the political and military leaders of the NATO Alliance for the next several years. The adoption of the strategy of flexible response by NATO in 1967 represented the culmination of a series of efforts within the Alliance to accommodate highly divergent and virtually irreconcilable interests and attitudes concerning the role of nuclear weapons and the defense of Europe. Under this strategy, published as NATO Military Committee Document MC 14/3, the Alliance signaled both its determination to resist Soviet aggression at any level and its willingness to escalate the conflict to whatever level necessary.¹⁰

To carry out the strategy, NATO would use a triad of forces—conventional, theater nuclear, and strategic nuclear. Conventional forces would deter conventional attack and provide the capability for defending against a conventional attack if deterrence failed. Theater nuclear forces would deter and defend against theater nuclear attack; help deter and, if necessary, defend against conventional attack; and help deter conflict escalation. Strategic forces, as the ultimate deterrent, would deter and defend against a Soviet strategic nuclear attack by the threat of an all-out retaliatory attack against the Soviet Union, deter conflict escalation, and reinforce theater nuclear forces if needed.¹¹

In effect, the NATO triad provided a continuous ladder of escalation options, from conventional forces through theater nuclear forces to strategic nuclear forces. The trip wire of the previous NATO strategy was replaced with a modified concept of Western defense which envisioned the use of nuclear weapons as a last resort if conventional forces failed to halt Warsaw Pact aggression. Nuclear weapons deployed in West-

ern Europe provided direct evidence of the United States' nuclear guarantee to the European Allies and a coupling to the use of strategic nuclear forces in the defense of Europe.¹²

NATO's flexible response could also be termed a strategy of "ambiguity."¹³ To an adversary the strategy was ambiguous, uncertain about what NATO's response would be in a given situation and about whether the potential risk would be worth the adversary's desired objective. To the NATO Allies the strategy of flexible response was ambiguous in a different sense. Flexible response represented an uneasy compromise between US and European views. Considerable latitude existed for differences concerning the force levels necessary at each stage to ensure credible deterrence. This ambiguity accommodated conflicting American and European interests but did not represent their reconciliation.¹⁴ The problem of resolving opposing views on the defense of Europe remained. The NATO strategy really only served to paper over the differences.

According to Stanley Hoffman, an American historian and strategist,

There was, in the first place, never any agreement on the military function of theater nuclear forces in NATO's strategy. Throughout the 1960's, the Americans wanted NATO to increase its conventional forces as the best way of deterring a Soviet attack, or rather as the best way of giving plausibility to the strategic nuclear guarantee of the United States. They argued for a firebreak between a conventional and a theater nuclear conflict, and looked at NATO's theater nuclear weapons mainly as a deterrent against a Soviet use of theater nuclear forces, plus as a last resort should conventional defense falter. But the Europeans would have preferred the threat of an early first use of NATO's theater nuclear forces, in order to make it impossible for the Soviets ever to believe that they could start and fight a purely conventional war in Europe. The "flexible response" strategy formally adopted in 1967 was a compromise that resolved nothing."¹⁵

In the view of German strategist Manfred Woerner the strategy of flexible response has been deliberately ambiguous in order to straddle the interests of the Germans who would want to escalate the conflict to the strategic level as quickly as possible and the interests of the Americans who might wish to keep a military conflict confined to Europe as long as possible.¹⁶

THE 1970s—DETENTE, DETERRENCE, AND WARFIGHTING

The beginning of the decade of the 1970s could be characterized as a three-fold search: for meaningful detente between the superpowers and between the Western Europeans and the Soviet Union; for a means to increase the credibility of the US strategic deterrent; and for the means to increase the warfighting capability of the NATO triad for more effective defense and enhance thereby the credibility of deterrence.

By the end of the decade, for the Americans, detente was all but destroyed. The continuing buildup of Soviet strategic, theater nuclear, and conventional forces and the activities of Soviet proxies in Africa and elsewhere were capped by the entry of Soviet divisions into Afghanistan. The NATO European Allies, particularly West Germany, hoped to maintain the benefits of increased dialogue and commerce with the East that detente had brought, but a spirit of renewed bellicosity developed between the United States and the Soviet Union that was to recall some of the feelings of the cold war of the 1950s.

In 1969 the United States began to search for concepts for more effective employment of strategic nuclear weapons, to deter Soviet activity by the threat of less than an all-out strategic nuclear exchange. The increase in Soviet strategic nuclear capability made the strategy of "mutual assured destruction" no longer credible to some. US strategic forces were modernized, and employment doctrine changed to enhance the flexibility of the US strategic deterrent and, in theory, make it more effective. But, the lack of credibility

grew as Soviet strategic forces, particularly their ICBM force, achieved parity with, and in some cases appeared to surpass the capability of, corresponding US strategic forces.

As the decade began, the United States emerged from its Vietnam experience. Endeavoring to make up for its neglect of Europe during the conflict in Vietnam and to counterbalance the increasing Soviet conventional capability, the United States put more emphasis on the development of its conventional forces and encouraged the NATO European Allies to do likewise. Stronger conventional forces provided a counterweight to Soviet conventional forces and, in theory, raised the nuclear threshold. In 1978 the Allies agreed to a Long-Term Defense Plan (LTDP) for increasing the effectiveness of NATO's conventional and nuclear forces and to a program which provided for annual real growth in spending for NATO forces of 3 percent by each of the NATO Allies. However, by the end of the decade, although the effectiveness of NATO's conventional forces had improved, sagging economies and domestic social priorities seriously affected conventional force modernization on both sides of the Atlantic. The potential threat to Western sources of oil in the Middle East, NATO's role in protecting these resources, and the burden of the defense of Europe to be borne by each of the Allies became issues between the United States and its European allies.

At issue, too, was the role of theater nuclear weapons in the defense of Western Europe. The flexible response strategy was open to different interpretations and left unresolved many questions on the development of nuclear weapons employment doctrine for implementing the strategy and many questions on requirements for modernization programs for theater nuclear weapons. What was the overall concept for use of tactical nuclear weapons in Europe? How would the use of such weapons relate to deterrence and to a strong conventional defense? What numbers and types of nuclear warheads were essential for the defense of Western Europe? And, what steps should be taken to develop a rational and coordinate nuclear posture by NATO consistent with proper emphasis on conventional defense forces?¹⁷

Tactical nuclear doctrine—deterrence or warfighting?
During the decade, the US Army developed new employment doctrine for tactical nuclear weapons to implement the flexible response strategy. The new doctrine, like the old, emphasized the dramatic impact of tactical nuclear weapons on the course of the battle. However, rather than being used as part of a massive nuclear response to *any* attack, tactical or theater nuclear weapons would be used to respond to an overwhelming conventional attack or to a nuclear attack by forces of the Warsaw Pact. The conventional defense was not to be predicated upon the use of nuclear weapons. But if the conventional defense were in danger of failing and the integrity of the corps position were in jeopardy, tactical nuclear weapons fired in "pulses" of perhaps as many as 200 warheads in a corps zone would be used to halt the enemy's attack decisively and create a situation conducive to negotiations and termination of the conflict on terms favorable to the United States and its allies.

In response to first use by the Warsaw Pact, in conjunction with surviving conventional forces, theater nuclear forces would be used to blunt the enemy armored attack, attack enemy theater nuclear forces, and attack or threaten enemy targets of value, so as to change the tactical situation and create a situation conducive to negotiations. For the first time US Army doctrine explicitly recognized the political character of the decision to use nuclear weapons.

West German staff officers, in informal staff talks on the new doctrine in 1977, raised strong objections to the explicit depiction of this doctrine, using an example set in West Germany. The Germans felt that the West German public would simply not countenance the idea of such numbers of nuclear weapons being used on their territory. Eventually, the doctrine was incorporated in US Army field manuals, using a representative scenario with no indication of the total number of weapons in the nuclear "pulse."¹⁸ The incident illustrates, however, the difference in views between the United States and the Europeans and the aversion of the West Germans to any consideration of nuclear warfighting on their territory. To

Western Europeans any nuclear weapon exploded in their territory was strategic, not tactical. In their view, deterrence must be the chief attribute of all forces, conventional or nuclear, and any talk of warfighting with either conventional or nuclear forces weakened deterrence.

The "neutron bomb" debacle. In 1973 US development programs for modernization of nuclear cannon artillery projectiles begun in the 1960s were cancelled. In the view of Senator Symington and other US Congressmen, the most recent technology for nuclear warheads was not being incorporated. The Departments of Defense and Energy reinitiated the programs and incorporated enhanced-radiation effects in new warheads for cannon artillery and for the Lance missile. In 1977, however, an article, "Neutron Killer Warhead Buried in ERDA Budget," appeared in the *Washington Post*. Written by a newsman who had been a staff member of the Symington committee which canceled the 1973 programs, this article resulted in a series of events which had a serious impact on the Alliance.

An intense public and private debate ensued on both sides of the Atlantic. President Carter stated his intention to develop and deploy enhanced-radiation warheads and sought allied support for this decision. Then, when allied support was almost forthcoming, Mr. Carter decided to defer production of enhanced-radiation warheads. The entire episode created a great deal of friction among the members of the Alliance. And as one researcher said, "Despite the outward appearance of satisfaction with the President's decision, Bonn and London had lost confidence in the President for the way the decision-making process was handled and for the event's implications for the future of European security."¹⁹

Long-range theater nuclear force modernization. Also in 1977, NATO's attention began to shift from concentration on the short-range or battlefield nuclear systems, such as cannon artillery and short-range rockets and missiles which constituted most of NATO's nuclear arsenal, to the long-range or medium-range component. In the late 1950s the United States

deployed a number of medium-range or intermediate-range ballistic missiles (IRBMs) in Europe in support of NATO. These were replaced in the 1960s by intercontinental ballistic missiles (ICBMs) based in the United States. The Soviet Union also deployed IRBMs, the SS-4 in 1959 and the SS-5 in 1961, to cover targets in Western Europe. In 1977, the Soviet Union deployed the SS-20, a three-warhead multiple independently targeted reentry vehicle (MIRV) system which was ostensibly a modernization of their IRBM forces. When this was coupled with other improvements in Soviet theater nuclear forces, some perceived a significant shift in the theater nuclear balance to favor the Soviet Union.

In a speech before the International Institute for Strategic Studies in October 1977 West German Chancellor Helmut Schmidt noted that SALT (the Strategic Arms Limitation Talks) had neutralized the strategic capabilities of the two superpowers, and therefore the disparities between East and West in nuclear tactical and conventional weapons would inevitably impair the security of the West European NATO allies. He concluded that these disparities would have to be removed. Schmidt's speech was a catalyst for Alliance studies that led to proposals to modernize NATO's Long-Range Theater Nuclear Force (LRTNF). The proposals revived two basic issues that had confronted NATO since its inception: the question of the continuing credibility of the American nuclear guarantee to Europe and the precise role of nuclear weapons in Alliance strategy and the problem of reconciling the frequently conflicting demands of NATO's dual policy of defense and detente, particularly the appropriate role for arms control negotiations, in ensuring Alliance security interests.

On 12 December 1979 NATO foreign and defense ministers announced that NATO's LRTNF would be modernized. One hundred eight Pershing II launchers and 464 ground-launched cruise missiles (GLCMs), all with single warheads, would be deployed in Western Europe and Great Britain. The deployment would close the gap in IRBM systems created by Soviet deployment of SS-20s and would create the basis for

arms control efforts to achieve a more stable overall nuclear balance at lower levels of nuclear weapons on both sides.²⁰

The increased range of the new systems would provide the capability to strike targets in Eastern Europe and in the western Soviet Union from launching positions in Western Europe and in Great Britain, just as could ICBMs fired from within the United States. Thus, LRTNF would symbolize the explicit coupling of NATO theater nuclear forces to central strategic systems and enhance the credibility of the nuclear deterrent of the United States and of NATO. Simultaneously, the United States would place renewed emphasis upon arms control talks with the Soviet Union. The decision to deploy modernized LRTNF provided a new bargaining position which could perhaps be traded for withdrawal of Soviet SS-4, SS-5, and SS-20 missiles.

THE 1980s—FLEXIBLE RESPONSE: A SEARCH FOR MEANING

The decision of the NATO Alliance to modernize LRTNF had both military and political bases. The military features of the program tended, in the view of its proponents, to strengthen deterrence and crisis stability, and to emphasize the identity of deterrence between Western Europe and the United States. As long as conventional forces alone could not assure Western Europe's security, as Christoph Bertram stated in *Foreign Affairs*:

The nuclear deterrence link to U.S. strategic forces remains necessary:

- U.S. nuclear forces *in Europe* will be a more credible and more proportionate demonstration of that link than U.S.-based strategic nuclear systems alone would be;
- these European forces should be able to survive a Soviet attack, so that the danger of slipping inadvertently into an all-out nuclear exchange would be minimized (the 464 ground-launched cruise missiles and

108 Pershing IIs of the NATO decision would be less vulnerable to attack than the present U.S. TNF arsenal in Europe);

—the composition of these forces should make the limitation of nuclear conflict to the European continent less likely (the new systems' ability to reach targets in the Soviet Union would widen the conflict beyond the immediate European conflict theater);

—and finally, these forces should provide additional deterrence but not an offensive option against the Soviet Union (neither the cruise missiles, which require a flight time of two to three hours to reach their targets, nor the Pershing IIs, which are well below the quantitative levels required for an effective disarming strike against Soviet military installations, provide serious offensive options). . . .

. . . At first the call for the new weapons came from Western Europe while the United States was significantly less impressed with the need for them. But as Soviet opposition and European domestic controversy over the program picked up and enthusiasm waned in Europe, the implementation of the program became for many in the United States a test of Alliance cohesion.²¹

As public and political clamor developed about the deployment proposal, the Belgian and Dutch governments postponed a final decision on whether to accept stationing of cruise missiles on their territory pending the results of the US and Soviet arms control talks. Some Dutch observers judged that a Dutch government would find it difficult, if not impossible, to agree to accept stationing of cruise missiles on Dutch territory. The Federal Republic of Germany made its participation conditional on at least one other continental nonnuclear state's also participating in the deployment. When Italy agreed to the construction of deployment sites on its territory, the condition for West German participation was fulfilled.²²

Even before the Alliance announced the decision to modernize NATO LRTNF, the Soviet Union launched a campaign to separate the Europeans from the decision to deploy the

new weapon systems. Following the decision, the Soviet Union claimed that the basis for negotiations on limiting theater nuclear arms had been destroyed. President Brezhnev later withdrew this position and proposed a moratorium on deployment of new medium-range nuclear missiles in Europe by both NATO and the Soviet Union. Soviet spokesmen also spoke of making Europe a nuclear-free zone. The Soviets appeared extremely apprehensive about the presence in Western Europe of a ground-based, mobile ballistic missile system of great accuracy (Pershing II) with the capability of striking targets in western Russia with almost no warning. To them, Pershing II was a first-strike system which, although limited in numbers, could threaten their own national command authority with destruction within minutes after being launched.

In its propaganda campaign the Soviet Union attempted to use the European and American antinuclear movements and the issues of "nuclear warfighting" and "nuclear escalation" against the United States. In appealing to the antinuclear movement Soviet spokesmen stated that it would be impossible to prevent the escalation of a nuclear war. They described

US attempts to plan for a "limited war" and to impose on the Soviet Union "rules of the game" ... as a "dangerous illusion." ... Soviet analysts warn that the Soviet Union will not wait to find out whether a US "first strike" is "limited" or not, but will "immediately," launch a "powerful" retaliatory strike as soon as the enemy's missile launch is detected.²³

When the United States announced its intention to go ahead with production and stockpiling of enhanced radiation warheads, the Soviet Union cited this as an attempt to try to limit any nuclear conflict to Western Europe. Many observers speculated that the decision to produce and deploy enhanced radiation warheads added to the mounting antinuclear movement in Europe and further undermined political support for modernization of NATO's LRTNF. Statements by Secretary of State Haig about the demonstrative use of theater nuclear weapons as a "nuclear shot across the bow," although reflect-

ing a possible use by NATO under the flexible response strategy, only served to exacerbate the public clamor.

In November 1981, the United States regained the initiative from the Soviet Union. President Reagan stated that the United States was prepared to cancel its deployment of Pershing II and GLCM if the Soviets would dismantle their SS-20, SS-4, and SS-5 missiles.²⁴ The "zero-level" option proposed for LRTNF not only regained the initiative from the Soviet Union but quieted much of the public and political rhetoric and led to a temporary reduction in the intensity of the antinuclear movement on both sides of the Atlantic.

In April 1982 as the United States was developing its position for the Strategic Arms Reduction Talks (START), the Reagan administration's successor to SALT, McGeorge Bundy, George Kennan, Robert McNamara, and Gerard Smith, in an article in *Foreign Affairs*, proposed that the United States renounce any first-use of nuclear weapons, either theater or strategic. "Every serious analysis and every military exercise . . . has demonstrated that even the most restrained battlefield use [of atomic weapons] would be enormously destructive to civilian life and property," wrote the four former officials. "Any use of nuclear weapons in Europe, by the Alliance or against it [also] carries with it a high and inescapable risk of escalation into the general nuclear war which would bring ruin to all and victory to none."²⁵ In response to this proposal Secretary Haig stated that such a doctrine would destroy "the very credibility of the Western strategy of deterrence (and leave) the West nothing with which to counterbalance the Soviet conventional advantages and geopolitical position in Europe." That, Haig added, would be "tantamount to making Europe safe for conventional aggression."²⁶

Some considerations for the 1980s. From the beginning of NATO, the deterrence of a conventional attack in Europe has been the objective of nuclear forces. Theater nuclear forces, in theory, made up for the lack of NATO's conventional muscle, and also deterred the use of theater nuclear weapons by the Soviet Union. NATO's original massive retaliation strat-

egy for using nuclear force in place of conventional strength, MC 14/2, was nullified in time by the acquisition of strategic and theater nuclear weapons by the Soviet Union. The efficacy of MC 14/3 and the strategy of flexible response which followed were challenged by the Soviet Union's achievement of strategic and tactical nuclear parity with the United States. NATO adopted LRTNF improvements which depend for their effectiveness upon the explicit link provided to US strategic forces and the threat they pose to Soviet Russia. However, the "zero-level" option, if accepted by the Soviet Union, would nullify this element of flexible response.

If the "no-first-use" proposal were adopted and the Alliance was willing to pay the cost, NATO's conventional forces could be increased to the point at which they are capable of defeating Warsaw Pact forces. But what would deter Pact use of theater nuclear weapons to achieve their objectives? If the United States and its NATO allies could reach political and military agreement on the "how" and "when" to use theater nuclear weapons, perhaps these systems could provide a credible link to the US strategic nuclear deterrent and a credible deterrent to both conventional and nuclear conflict. What is required in the 1980s to make the strategy of flexible response effective in providing for the national security of the countries of Western Europe and of the United States?

THE US COMMITMENT TO THE DEFENSE OF EUROPE

The search for meaning on the role of nuclear forces in NATO's strategy of flexible response has not been the only issue confronting the Alliance. Another major issue during the early 1970s, an issue fundamental to the US commitment, was the continuing presence in Europe of over 300 thousand American troops. In 1973 congressional pressure for reducing their number reflected the American public's general post-Vietnam discontent with large and ongoing US military commitments abroad and its specific and more pronounced resentment of a perceived refusal on the part of prosperous and powerful Western European nations to bear their fair

share of NATO's defense burden. Rising irritation with European economic competition and a seemingly endless drain by US troops and their dependents on the US balance of payments aggravated this resentment. The feeling of expanding detente between the Soviet Union and the West also served to undercut in the public mind the need for continued stationing of large numbers of US troops in Europe.

To the Western European allies, however, the presence of US forces symbolized the US guarantee of the security of Europe. Deployed US forces existed not just for their conventional fighting capability, but also as symbols of the US nuclear guarantee: rather than risk the loss of these forces to a Warsaw Pact attack, the US would use nuclear weapons, if required, in their defense and in the defense of Western Europe. Because deployed US forces symbolized the US guarantee, the European NATO Allies protested strongly any proposals for US force reductions.

Many of the same feelings have recurred in the early 1980s, following what many Americans regarded as the failure of the Europeans to support fully American sanctions against the Soviet Union after that nation invaded Afghanistan. The European allies' refusal to expand NATO's defensive responsibilities outside its traditional area, in the face of increased threats to Western sources of energy in the Middle East, has also been a contributing factor. Coupled with doubts that arose about the US strategic nuclear guarantee and with, perhaps, a latent desire to retreat to the isolation of the simpler 1930s, these considerations led a number of US authorities, defense analysts, and the American public to question the degree of US responsibility for the defense of Europe. Why should the United States commit itself to Western Europe's defense, particularly if the Europeans fail to carry their share of the load?²⁷

Three views could be taken of this commitment. First, a *selfish view*: In pursuit of containment of the influence and expansion of the Soviet Empire the nations of Western Europe constitute the first line of defense. If a conflict is to occur in-

volving the superpowers, it is better that conflict take place on European soil rather than on US territory. Second, an *altruistic view*: In the words of Arthur Burns, Ambassador to the Federal Republic of Germany:

... The sense of a shared ethos that underlies the relationship between Europe and the United States assumes special importance.... a shared ethos is the philosophic and ethical essence of our relationship ... that in times of crisis and challenge makes natural allies of the Western democracies.... respect for human rights, faith in democracy, and devotion to the rule of law. And these common binding values make our societies different from those that do not share them—those that profess an ideology which scorns human rights, which relies on dictatorial power, which flouts the rule of law, and which is incapable of tolerating dissent.²⁸

And finally, a *pragmatic view*: Senator Sam Nunn writing in *NATO Review*:

The survival of Western Europe is vital to the United States. Our political, economic, cultural, and historic ties with Europe are such that events on that continent affect the United States and will continue to do so, in a way that events in no other part of the world can. The United States has fought two major wars in Europe in this century. The cost of these wars in blood and treasure dwarfs the cost of deterring future war on that continent. *The defense of Europe is the defense of the United States.* [Italics supplied.] The fate of freedom in Europe and in the United States is closely linked.²⁹

Inherent in the US commitment to the defense of Europe is, however, a danger. Commitment to the defense of Western Europe presents the risk of a face-to-face confrontation between the United States and the Soviet Union. Before the era of strategic nuclear weapons, when conflicts developed more slowly, the danger to a state and its people could be dealt with more gradually. In 1982 both superpowers possessed the capability to destroy one another in minutes. The outbreak of a conflict in Europe, or elsewhere, if it involved the vital interests

of the superpowers, could escalate into a strategic nuclear exchange and result in the destruction of both countries, as well as their allies.

In 1963 France developed its own strategic nuclear forces and in 1966 withdrew its military forces from NATO because of French President DeGaulle's lack of faith in the credibility of the US strategic nuclear guarantee. General Pierre Gallois wrote that a nuclear power "can only ensure its own protection, since it is hardly credible that it should expose its entire property to destruction merely to ensure the protection of another state."³⁰ (Lawrence Martin later commented on Gallois' statement, "Whether a state would die or risk destruction even for itself is, of course, also a subject for debate."³¹

Does the willingness of the United States to act in the defense of Europe extend to risking its survival as a nation and the survival of its people? Gallois would argue that the survival of the state and the protection of its people are the highest duties of a nation. The argument, however, is moot. A United States which failed to meet its stated commitment in defense of its allies in Europe would ultimately be far different and far weaker than the nation which exists as of 1982.

The shock to the international credibility and national self-image of the United States in such an event would be far more traumatic than that which occurred following the failure of the United States to come to the aid of South Vietnam in 1975. That event seared the American conscience. The US withdrawal from South Vietnam followed by its failure to meet its commitment to aid that nation during the 1975 invasion by North Vietnam weakened the credibility of the United States among its allies. Soviet support of the actions of its proxies in Africa and its willingness to move into almost any area in which a political vacuum existed may have resulted directly from the lack of American credibility.

If, under threat of nuclear blackmail, the United States failed to meet its commitment to the NATO Alliance and the nations of Western Europe came under the hegemony of the Soviet Union, the United States would be reduced to a

second-rate, insular power emasculated by the loss of traditional cultural ties, economic markets, and sources of political, economic, and military strength. Further, should there be any belief by the leaders of the Soviet Union that the United States would not be willing to use its strategic forces in the defense of Western Europe they might be tempted to risk an attack or a misadventure which could then escalate to an all-out, strategic exchange resulting in the destruction of the United States.

Secretary of State Haig summarized the debate.

A familiar argument is that, in a nuclear age, we must choose between our ideals and our existence. If nuclear weapons offer the only deterrent to nuclear blackmail, some would argue that we should submit rather than pose the risk of nuclear conflict. This choice, however, is a false one. By maintaining the military balance and sustaining deterrence, we protect the essential values of Western civilization—democratic government, personal liberty, and religious freedom—and preserve the peace. In failing to maintain deterrence, we would risk our own freedoms while actually increasing the likelihood of also suffering nuclear devastation."³²

If, then, the maintenance of the US commitment to the defense of Europe is fundamental to US national interests and national security objectives, what are the fundamental national security objectives for the nations of Western Europe? As reflected in recent defense white papers of the Federal Republic of Germany and of the United Kingdom, they closely parallel those of the United States: maintenance of peace and freedom (FRG), and ensuring the nation's security and keeping it free to pursue its legitimate interests and activities (UK).^{33,34} For both states, as for the United States, deterrence of conflict and preparedness to defend against aggression within the framework of the collective defense of the Atlantic Alliance, should deterrence fail, provide the foundation for their respective defense policies. For the Europeans, however, the notion of deterrence of a conflict receives even more emphasis than it does in the United States.

A conflict between NATO and the Warsaw Pact which does not escalate to a strategic exchange would involve conventional and perhaps theater nuclear combat on Western European territory, particularly that of the Federal Republic of Germany. European members of the Alliance focus strongly on the US strategic guarantee as the most effective element of deterrence. Some would like to believe that a nuclear exchange between NATO and the Warsaw Pact could or would be conducted over their heads—against the respective homelands of the United States and the Soviet Union—leaving the Continent untouched.³⁵ This view appears to be wishful thinking.

It is difficult to conceive how the nations of Western Europe could escape the effects of a strategic nuclear exchange. Both Britain and France possess their own strategic weapon systems which the Soviet Union would undoubtedly regard as a potential threat in war and in any postconflict period. The Soviet Union would also regard tactical and theater nuclear weapons deployed in the other continental NATO countries as a threat. Even intact conventional forces of an uncommitted European state might be considered a post-conflict threat and be targeted by the Soviet Union during a conflict with the United States.

The territory and people of the United States and of its Western European allies would be potentially at risk in any conflict with the Warsaw Pact. Short of general and complete disarmament by both NATO and the Warsaw Pact, a condition not likely to occur, the possibility of a war between the two blocs exists. In the North Atlantic Treaty, the Atlantic Alliance has focused on maintaining adequate military strength and political solidarity to deter such a war and to defend the territory of the member countries if deterrence failed and aggression occurred. Achievement of these goals requires the mutual commitment of all members of the Alliance.

Alexander Haig characterized NATO saying, "The Alliance cannot function as a limited corporation. It can only survive as a partnership to which all are equally and fully

committed—shared benefits, shared burdens, shared risks.”³⁶
What remains is to configure the risks and configure the burdens, so that the maximum benefits accrue to all the members, and so that the maximum credibility is established in NATO’s strategy of flexible response.

2. FLEXIBLE RESPONSE, CREDIBLE DETERRENCE, AND ESCALATION CONTROL

The North Atlantic Treaty and the statements of NATO strategy since the inception of the Alliance reflect deterrence as the principal objective of NATO strategy. Nuclear weapons have been a major element of that strategy. However,

changing political, military, and technological conditions [have] brought into sharp relief challenges to traditional US and European views on the deterrent value of nuclear weapons.... The NATO strategy of "flexible response" encompassed—but did not reconcile—diverging views about deterrence in NATO. The United States, stressing the need for strong military forces, has increasingly emphasized a conventional defense. The European members of the alliance, while improving their conventional defenses, have continued to insist upon the potential use of nuclear weapons (in all-out nuclear war, if necessary) as the primary means of deterring a Warsaw Pact attack.¹

Regardless of the view, however, the objective has been deterrence. The Alliance has stated its intent to defend against an aggressor should deterrence fail, but the hope has been that the deterrent would be so credible that any potential aggressor would be deterred, and no aggression would occur. Credible deterrence, however, requires forces in being, doctrine for their employment, the will to use them, and a belief by any potential aggressor that the will to use the forces exists. Should any part of the equation be lacking, there is a risk that deterrence may fail.

THE ROLE OF MILITARY FORCE IN A CREDIBLE DETERRENT

In the words of one OSD strategist,

"Deterrence" refers to measures taken by a state or alliance to dissuade other states or alliances from taking hostile actions. The mechanism through which deterrence operates is the threat of injury to an aggressor, to be inflicted in response to hostile acts.²

Fundamental to the effectiveness of a deterrent are two perceptions on the part of a potential aggressor: (1) a force exists which is sufficient to thwart the aggressor's objective and (2) the will exists to use that force. Occasionally, deterrence "on the cheap" may be achieved; i.e., the force does not exist to the extent perceived, or the actual will to use the force is less than perceived by the aggressor. Should, however, an aggressor doubt either the sufficiency of will or the sufficiency of force, risk the threat, and attack, deterrence will have failed.

Will. In the prenuclear era when the risk of punishment was posed only by conventional forces, in a time of doubt an aggressor might have been more likely to challenge an adversary. Germany's reoccupation of the Rhineland in 1936 provides an example. German troops entered the demilitarized zone on 7 March 1936 "with orders to stage a fighting withdrawal if challenged by French troops." When the French Ambassador in Berlin "urged 'energetic reaction' " and the French Commander in Chief General Gamelin agreed "to rush thirteen divisions to the Maginot Line, ... Gamelin's opposite number in Berlin" panicked. "General von Blomberg begged Hitler to at least withdraw troops from Aachen, Trier, and Saarbrücken," saying that "if the French attacked ... the Germans would have to pull back without a battle, ... Hitler remained resolute," however, and by 9 March "more than 25,000 German troops ... were established in the Rhine zone." Hitler later said, "the forty-eight hours after the march

into the Rhineland ... were the most nerve-racking in my life.' If the French had retaliated 'we would have had to withdraw with our tails between our legs, for the military resources at our disposal would have been wholly inadequate for even a moderate resistance.' "3

Would Hitler have attempted to reoccupy the Rhineland if the French had possessed nuclear weapons and posed the threat of almost immediate destruction of the German forces or of retaliation against targets in Germany? Probably not. According to an "argument so frequently enunciated in the context of NATO by a former British minister for Defence that it deserves to be known as 'Healey's Theorem': if there is one chance in a hundred of nuclear weapons being used, the odds would be sufficient to deter an aggressor even if they were not enough to reassure an ally. ... A microscopic degree of credibility ... may be all that is needed to work effectively."4

Perception. An adversary's perception of NATO's "political will" to take the necessary action when confronted with aggression is basic to the credibility of the NATO deterrent. Nonmilitary factors are a major part of the perception of Alliance will—the political solidarity of NATO nations, individually and collectively; the record of the past actions of the Alliance and its member states in crisis and conflict; and the economic ability of the nations of the Alliance to sustain a conflict. These factors are included in the "correlation of forces" referred to by Soviet leaders in assessing overall trends favoring East or West.⁵ The greater the solidarity of NATO on major political, economic, and military issues, the better NATO can deter deliberate provocation of crises and manage those crises which may occur.⁶ To the degree, however, that NATO lacks solidarity, an adversary may perceive that NATO lacks the political will to enforce its deterrent.

THE NATO TRIAD—FORCES AND DOCTRINE

NATO's strategy of flexible response is implemented through a triad of forces.

The roles of each element of the NATO triad are complementary; they are not independent.⁷ As a deterrent, the credibility of the forces lies in their capability for being employed to impose punishment on an aggressor so that the cost to the aggressor of pursuing his aggression is greater than the benefits to be gained. The credibility of the forces themselves is inextricably linked to the will of the Alliance to use them and to the strategy or doctrine for their use. The alliance professes the willingness, if deterrence fails, to defeat aggression at any level of attack (conventional or nuclear) chosen by an enemy. If the level of response selected is insufficient, the Alliance states its willingness to increase military force deliberately to make the cost and risk disproportionate to the enemy's objectives and cause him to cease his aggression and withdraw. The statement of NATO's resolve extends to the threat of using strategic nuclear weapons, if required.⁸

The strategy requires an almost continuous spectrum of possible responses to meet an enemy at the level required and to escalate if necessary. However, the step from one level of force to a higher one should not be so severe that an enemy might suppose that the NATO countries would be unwilling to take it.⁹

The forces themselves, however, are not enough to provide a credible deterrent. They are a necessary but not sufficient condition. Credible doctrine for their employment must also exist. As is the case with "will," the possibility of deterrence on the cheap is present. But, should the potential aggressor doubt either the sufficiency of the force or the adequacy of the doctrine for its use, the deterrent may not deter.

Strategic forces, of course, provide the ultimate deterrent, but it is one whose credibility for actual use has been repeatedly challenged. As a result, their deterrent capability may also be questioned. Through the articulation of the countervailing strategy and programs for modernization of its strategic forces, such as MX, Trident D-5, B-1, and Stealth bombers and the air-launched cruise missile (ALCM), the United States

has sought to increase the credibility of its strategic deterrent. Modernized strategic forces pose the threat of more flexible strategic options with forces comparable to or superior to those of the Soviet Union. Given "Healey's theorem," previously cited, the possibility that there is even the most microscopic chance of strategic weapons being employed in response to aggression is probably sufficient to deter an aggressor from using his strategic forces. Deterrence should increase as strategic force improvements are made which contribute to the preservation and increased capability of a secure strategic reserve capable of executing a successful second strike against an aggressor.

But the strategic deterrent works both ways. To the extent that the strategic forces of the United States deter those of the Soviet Union, those of the Soviet Union deter those of the United States. Mutually assured destruction is an irrational but real threat and, consequently, a real deterrent. However, "so long as it is technically feasible, there is little reason to question the credibility of a governmental decision to retaliate after ... [being subject] to nuclear attack [on its own territory]." ¹⁰

Strategic nuclear forces deter other strategic nuclear forces, but the credibility of their being employed in defense of any save the most vital interests of a state is open to serious question. The threat of mutual annihilation limits the range of hostile actions which can be deterred by strategic forces and places more emphasis on the deterrent roles of theater and conventional forces. ¹¹

Conventional forces. Conventional forces are at the end of the spectrum of flexible response that is most distant from strategic forces. To the extent that they are capable of defeating a conventional attack by an aggressor, or at least of making the price of such an attack more costly than the aggressor will bear, they deter conventional attack. For NATO they provide the capability for defeating or defending against a limited objective or local attack by Warsaw Pact forces, a minor border incursion, or a so-called war of inadvertence.

A credible conventional capability is one perceived as sufficient to defend well forward—without early recourse to theater nuclear weapons—to deny an aggressor easy or rapid capture of NATO territory. To do this NATO must deploy conventional forces well forward in considerable strength and be able to bring up reinforcements in large numbers and in good time to pose the threat of mounting a credible defense against a Warsaw Pact attack. Most measures in NATO's Long-Term Defense Program have been designed to increase the credibility of NATO's conventional forces.¹²

Since the mid-1960s, however, the capability of Soviet conventional forces has steadily increased. New generations of tanks and armored fighting vehicles, improved field artillery, guided antitank missiles, air defense systems, and ground support aircraft and helicopters increase the striking power of Warsaw Pact forces located in Eastern Europe and in the Soviet Union. Pact forces have increased in quantity and, perhaps more significantly, in quality as well. NATO's forces have lost most of the technological edge which allowed the Alliance to believe that quality could substitute for numbers. In the view of the International Institute for Strategic Studies, the balance of conventional forces in Europe has slowly but steadily moved in favor of the Warsaw Pact. "One cannot necessarily conclude from this that NATO would suffer defeat in war, but one can conclude that there has been sufficient danger in the trend to require urgent remedies."¹³

Theater nuclear forces. NATO's theater nuclear forces link its conventional forces to the deterrent posed by its strategic forces. They deter theater nuclear attack by the Soviet Union and the Warsaw Pact. Should conventional deterrence fail, they provide a hedge against the defensive failure of conventional forces by providing the capability in concert with those forces for defeating a massive conventional attack, creating a pause in the conflict, and providing the basis for termination of the conflict on terms acceptable to the United States and its allies.

Theater nuclear forces can be subdivided into three classes distinguished by the range of the weapons system in question: battlefield, medium-range, and long-range theater nuclear forces.¹⁴

Battlefield theater nuclear forces (BNF) include weapons, such as nuclear-capable cannon artillery, rockets, and short-range missile systems, having ranges up to 100 kilometers (table 2-1).¹⁵ Atomic demolition munitions also fall into this category. The range of such systems limits their employment to the immediate vicinity of the tactical battle. Should they be used by NATO to assist in halting a conventional attack by Warsaw Pact forces, the majority of their effects would occur in West European territory, particularly on that of the Federal Republic of Germany. (See figure 2-1.) Should NATO choose to use BNF, however, the fact of their limited range may convey to an aggressor the desire to limit the escalation of the conflict.

The BNF currently deployed in Europe possess a number of serious shortcomings. For the most part they represent the nuclear weapons warhead technology of the 1950s. Since that time newer weapons have been developed which have significantly improved radii of effects against military targets and reduced radii of collateral damage. The enhanced radiation warheads for the eight-inch cannon and for the Lance missile are two such weapons. Notwithstanding the political furor about the "neutron bomb" which developed in 1977 and recurred in 1981 following the US decision to produce and stockpile these warheads, they do have military utility superior to those systems they would replace. Another serious shortcoming cited for BNF is their survivability when carried by units deployed close to the line of contact. Probably the most serious shortcoming for BNF lies in the lack of a publicly accepted political and military doctrine for use of such systems.

Medium-range theater nuclear forces (MRTNF) include missile systems and air-delivered nuclear weapons capable of delivery to ranges of 100 to 1,000 kilometers (table 2-1). These systems also provide a hedge for the conventional de-

Table 2-1. US/NATO and Soviet/Pact Land-Based Theater Nuclear Forces

Category	US/NATO	Soviet/Pact
<i>Battlefield (Range 100 km.)</i>		
Atomic Demolition Munitions	X	
Nuclear-Capable Cannon	M110 203 mm. M109 155 mm.	S-23 180 mm. (estimated)
Rockets and Missiles	Honest John Lance Pluton (France)	FROG-3/7 SS-21
<i>Medium Range (Range 100-1,000 km.)</i>		
Medium/Intermediate-Range Missiles	Pershing 1A	SCUD-A/B/C SCALEBOARD SS-22 SS-23 SEPAL (GLCM)
Strike Aircraft	F-4 F-104 Jaguar	SU-7 SU-17 MiG-21 MiG-23/-27 SU-19 SU-24
<i>Long-Range (Range over 1,000 km.)</i>		
Missiles	Pershing II GLCM	SS-4 SS-5 SS-20
Medium-Range Bombers	Vulcan (Britain) FB-111A	Badger Blinder Backfire
Strike Aircraft	F-111/E/F Buccaneer (Britain) Mirage (France)	

Source: The Military Balance: 1981-1982 (London: International Institute for Strategic Studies, 1981), pp. 105-106, 128-129.

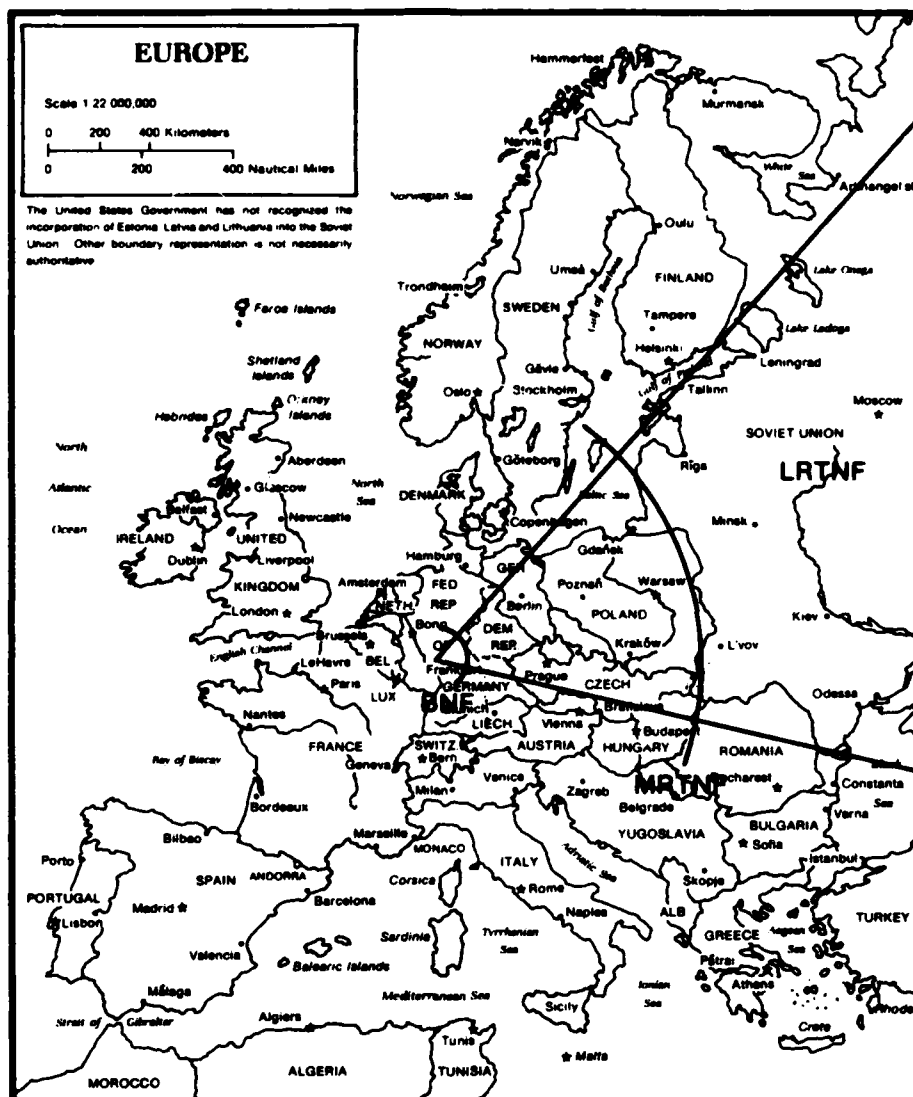


Figure 2-1. Coverage for Theater Nuclear Weapons

fense by providing the capability for interdicting advancing enemy second-echelon forces, assembly areas, and communications and logistical installations supporting the enemy attack. Since MRTNF possess the capability of striking targets in non-Soviet Warsaw Pact countries in Eastern Europe, their use by NATO would represent a wider war, a higher degree of escalation than the use of BNF alone. However, interdiction of advancing second or "follow-on" echelons to prevent reinforcement of a conventional attack is critical to the success of NATO's defense of Western Europe.

Long-range theater nuclear forces (LRTNF) include those missiles and nuclear-capable aircraft deployed in the theater with range capabilities in excess of 1,000 kilometers (table 2-1). Included in this category are FB-111 aircraft deployed in England, the Pershing II, and GLCM (deployment of the GLCM has been proposed in the LRTNF modernization program). These highly mobile "Eurostrategic" systems deter the use of Soviet LRTNF—the SS-4, SS-5, SS-20 and medium-range nuclear-capable aircraft—against Western European targets by posing the threat of a counterstrike against the Soviet homeland. Similarly, they deter the use of Soviet strategic systems against Western Europe targets. In West European eyes, these American systems deployed in Western Europe, because they possess the capability of striking the Soviet Union, provide a direct coupling to US strategic nuclear forces and clear evidence of the US nuclear guarantee to defend Europe. Because they pose a direct threat to Soviet territory, Soviet forces would undoubtedly attempt to destroy them in any attack upon Western Europe. Rather than see its LRTNF destroyed unused, NATO would use them, and the war would immediately escalate to a superpower strategic exchange, fired over the heads of the people of Western Europe. Rather than risk such an exchange, so the logic goes, the Soviets and the Warsaw Pact would not risk an attack in Europe. The credibility of NATO's deterrent strategy would be maintained.

Shortcomings inherent in LRTNF are primarily doctrinal and philosophical. The Soviets might accept the logic associated with LRTNF deterrence, or they might believe that the

threat of a follow-on strategic exchange between the super-powers would deter the United States and NATO from ever reaching political agreement on the use of LRTNF. Because the use of LRTNF would involve the destruction of targets in the Soviet homeland, such use represents a highly unstable level of escalation which could easily expand to a central strategic exchange resulting in the destruction of the United States, of the Soviet Union, and of Western Europe. Finally the LRTNF "zero-level" proposal, if accepted, would totally nullify the contribution of LRTNF to NATO's deterrent strategy of flexible response.

Shortcomings in theater nuclear forces. In addition to the shortcomings enumerated above, other shortcomings are common to all categories of theater nuclear forces. Several of them are also common to conventional forces. To warhead effectiveness and survivability can be added deficiencies in target acquisition. NATO possesses good capabilities for acquisition of fixed targets, such as airbases and established enemy defensive positions. Good capabilities exist for acquisition and attack of mobile targets within line of sight of the "forward line of own troops" (FLOT) in the battle area. Improvements are needed, however, in the ability to acquire and attack mobile targets beyond the line of sight from the FLOT.¹⁶

Command, control, and communications (C³) are other areas essential both to deterrence and the flexible employment of theater nuclear and conventional forces. To improve its communications systems NATO is considering measures for upgrading situation reporting and message handling. Particularly critical is the question of how to request and receive authority to employ nuclear weapons in a timely manner. Results of exercises incorporated in US Army field manuals depict a nuclear request and release sequence which requires more than 24 hours from the time a corps commander decides the success of his defense will depend upon the use of tactical nuclear weapons to the time the weapons are used. During the request and release period, the request is transmitted through, evaluated, and coordinated at successive echelons

in the NATO command structure. Upon approval by NATO political authorities and the US national command authority, the authorization to use nuclear weapons is transmitted through channels to the firing units.¹⁷ The request and release procedures require the corps commander to anticipate the course of the battle some 24 to 48 hours in advance in order that the authority to use nuclear weapons, if granted, will be received in time to accomplish the desired objective.

The uncertainties about the timeliness of nuclear release and whether or not release authority will even be granted are so prevalent that US Army doctrinal literature states, "Of course, the commander must have a strong conventional option in the event nuclear release is not forthcoming."¹⁸ At the heart of these uncertainties are the lack of agreement among the members of the Alliance about the role of theater nuclear weapons; the lack of an agreed upon and politically acceptable doctrine for their use if such use should be required; and, I believe, a lack of understanding by political authorities of battlefield situations which may require the use of theater nuclear weapons to maintain the integrity of NATO's defense.

DOCTRINE FOR NATO'S THEATER NUCLEAR FORCES

A number of defense analysts have argued the absence of a coherent and well-defined doctrine for the use of theater nuclear forces.¹⁹ Doctrine for use of LRTNF is similar to that for strategic forces, simply because of the strategic character of LRTNF. The Allies do not agree on doctrine for MRTNF and BNF. Here, I believe, the differing view of Europeans and Americans creates the problem: deterrence versus warfighting, fears that the conflict will be limited to European territory versus fear that the conflict will involve American territory, and emphasis on nuclear forces versus emphasis on conventional forces.

Under the strategy of massive retaliation in NATO's MC 14/2, theater nuclear weapons were to be used in quantity early in any conflict between NATO and the Warsaw Pact to

extend punishment to Pact military forces in the theater. As reflected in US Army doctrine of the 1960s, general release for unrestricted use of nuclear weapons was expected to be received almost as soon as Warsaw Pact forces crossed the interzonal border between East and West Germany. Nuclear weapons were viewed as elements of firepower to be used to make up for deficiencies in conventional forces. Authority to use nuclear weapons, once received, would be decentralized to the lowest possible level. The use of nuclear weapons would be integrated with nonnuclear firepower and maneuver to produce decisive results and would permit courses of action which otherwise would not be feasible.²⁰ US Army doctrine of the period did not discuss political considerations relative to a decision to use nuclear weapons.

In 1973 the US Army published a new policy for constrained use of nuclear weapons which incorporated the NATO strategy of flexible response of MC 14/3 and NATO's Guidelines for Nuclear Weapons Employment, adopted by the NATO Military Committee in 1969. Approved by the Army Chief of Staff, the paper distinguished five general categories for constrained tactical employment of nuclear weapons: (1) demonstration, (2) limited defensive use, (3) restricted battle area use, (4) extended battle area use, and (5) theaterwide use.²¹ Planning for tactical employment of nuclear weapons focused at the corps.

Theater nuclear weapons would be used after the corps' conventional defenses had been severely tested and were in danger of failing. The political objective of using nuclear weapons was to achieve early termination of the conflict at the lowest level of violence on terms acceptable to the United States and its allies. Employment of nuclear weapons was to demonstrate to enemy leaders that the potential losses outweighed the gains if a conflict continued or escalated. To accomplish this end, nuclear weapons would be used to alter the course of the battle positively and persuasively and preclude an enemy's achieving an objective. Depending on the enemy's response to initial nuclear employment, additional use of nuclear weapons might be required or directed. In all cases,

follow-on strikes would support the basic purpose of terminating the conflict decisively at the lowest level of violence consistent with national and allied goals.²²

Although tactical nuclear planning at the corps level was aimed toward the achievement of tactical goals, the doctrine recognized that any use of nuclear weapons has a fundamentally political aspect of which planners at all echelons had to be aware. For the first time, US Army doctrine explicitly acknowledged that whether and how much nuclear weapons would be used in a given conflict were strategic decisions that high-level political and military authorities would make.²³ The doctrine acknowledged that nuclear operations would be conducted within political and military constraints, which might include geographical and political constraints, yield limitations, time, numbers of weapons to be used, guidance for precluding collateral damage, and restrictions on using specific delivery systems or attacking specific types of targets.

For the US Army, the corps nuclear weapons package is the basic planning and control element. A package is a *discrete grouping of nuclear weapons for employment in a specified area during a short time period to support a corps tactical mission*. Packages are planned prior to hostilities, and refined during hostilities to obtain the best tactical effect. They serve as the framework for the corps commander's request to use nuclear weapons if he estimates, based on the situation, that he cannot defend successfully without them. A package is fired in the shortest possible time (a pulse) to obtain the shock effect desired and convey to an enemy that nuclear weapons are being used in a limited manner. The doctrine establishes two techniques for developing nuclear plans: preclusion-oriented target analysis and target-oriented planning. Preclusion-oriented planning seeks to avoid excessive damage to population centers and facilities while employing yields that have maximum effect on probable enemy locations within the remainder of the target area. Target-oriented planning is used against targets of known location, size, and composition to achieve the desired level of target damage within employment constraints.²⁴

As a teaching tool for the US Army Command and General Staff College, an example of a nuclear weapons package was developed for use in a corps defense of the Hunfeld Gap north of Fulda in West Germany. The package consisted of approximately 200 cannon, missile, and air-delivered nuclear weapons. Incorporated in a college reference book distributed to the officer students, the example became part of a draft of Field Manual (FM) 100-5-1, which was to be the Army's capstone manual for nuclear weapons employment doctrine. However, the doctrine's implications (attainment of the corps' objective might require repeated use of comparably sized packages, and the corps in the example represented only one of the eight Allied corps deployed in the Federal Republic of Germany in a conflict) were unacceptable to the Europeans. They simply would not countenance the concept of *extended* nuclear warfighting confined to Western Europe. Stemming from the horrors of the results of Hiroshima and Nagasaki and the image of widespread destruction and civilian casualties created by NATO war games and nuclear exercises, such as Carte Blanche in the late 1950s and early 1960s, this view occurs repeatedly in European and US popular literature and among many academic, political, and military leaders in the European and American strategic communities.

Many Americans also shrink from the idea of a tactical nuclear war. Their reasoning, however, stems from the belief that a tactical nuclear war cannot be controlled and that even the use of one tactical nuclear weapon would inevitably escalate to a devastating strategic nuclear exchange. In short, once the "firebreak" between conventional nuclear warfare is crossed, the conflict cannot be limited. In their view "the use of tactical nuclear weapons cannot lead to a predictable military outcome. Nobody knows how to fight a tactical nuclear war."²⁵ For this reason, since the early 1960s, the United States has emphasized the development and maintenance, by the members of the Alliance, of conventional forces of sufficient size and capability to prevent a Warsaw Pact attack from achieving its objectives and to permit termination of a conflict on acceptable terms. Confining the conflict to Western Europe and

avoiding involvement of US territory are not the goals. The United States seeks to raise the nuclear threshold, limit the extent of the conflict, and avoid, if possible, escalation of the conflict to the strategic level.

Thus, views on both sides of the Atlantic tend to discredit the role of tactical nuclear weapons in NATO's flexible response strategy, other than as a deterrent to or as a response to the use of tactical nuclear weapons by the Warsaw Pact. The ambiguities of how weapons might be used and uncertainty of release, coupled with an aversion to the thought of nuclear conflict, contribute to these views. In this absence of a credible doctrine for their use, NATO's tactical nuclear forces do not provide a credible deterrent, except through the linkage of escalation to the use of strategic forces. However, strategic force credibility has also been repeatedly challenged. The conventional forces of NATO could be increased to the point of being capable of defeating a Warsaw Pact conventional attack, but without a credible NATO threat to use tactical nuclear weapons, what would deter Pact use of tactical nuclear weapons? As an appropriate deterrent response, a credible doctrine must be developed for the use of tactical nuclear weapons on the battlefield. To be credible that doctrine must be politically acceptable to the Western European Allies and to the United States, must be militarily effective, must have a low probability of escalating a conflict to the strategic level, and must contribute to NATO's overall objectives of deterrence and of arms control.

THE STRATEGY OF FLEXIBLE RESPONSE

NATO's flexible response strategy can include a credible doctrine for the employment of tactical nuclear weapons. Deterrence is the objective, but credible deterrence requires the capability to maintain a strong defense well forward, avoid loss of NATO territory, and deny any aggressors their objectives.

To support this end strong conventional forces would be maintained to defeat a conventional attack, if possible, and to maintain a high nuclear threshold. In addition, in order to ensure the US nuclear guarantee and to emphasize the mutual commitment to the defense of Europe, the United States would continue to deploy significant US ground forces in Western Europe, but European forces would bear the majority of the initial ground combat role until reinforcing US forces could be deployed to Western Europe.

Tactical nuclear weapons—BNF and MRTNF—would provide a hedge against the failure of the defense. If NATO's conventional defenses were in danger of failing, i.e., if the Warsaw Pact attack were succeeding and significant NATO territory was in danger of being lost, NATO would use tactical nuclear weapons in a *limited* manner in concert with conventional forces to defeat the attack, halt advancing Pact forces, and support a NATO counterattack to regain the lost territory. The limited character of the use of nuclear weapons against military targets would be designed to achieve the desired military objective and convey to the Pact not only NATO's desire to limit the conflict but also NATO's resolve to end the conflict on *its* terms, rather than those of the Pact.

Strategic nuclear systems—both LRTNF and central systems of the United States and the United Kingdom—would deter *any* use of nuclear weapons, strategic or theater, by the Warsaw Pact and the Soviet Union and deter expansion or continuation of the conflict. In essence, the policy would be declarative: any use of nuclear weapons by the aggressor would be met with the strategic nuclear forces of the Alliance; any attempt to continue the conflict, following the success of NATO's counterattack, or to expand the conflict would be met by escalation to the strategic level.

I believe that emphasizing the limited use of BNF and MRTNF, as opposed to the concept of extended warfighting, could gain the acceptance of the European allies. To a degree the argument is semantic, *limited* warfighting versus *extended* warfighting, but I propose the use of far fewer nuclear

weapons than the more than 3,200 which might be inferred from the 1977 example in the draft FM 100-5-1.²⁶ The effectiveness of limited use of tactical nuclear weapons does presuppose a significant increase in the capability of NATO's conventional forces to attack and defeat many targets that ordinarily would today require the use of nuclear weapons. It also requires the deployment of more effective tactical nuclear warheads that are capable of being employed with greater accuracy, possess a range of tailored effects, and cause lower collateral damage.

To those who would say that the Europeans will never accept any use of tactical nuclear weapons on their territory, I argue that the consequences of not using them in such a situation would be far greater: extended conventional warfighting, its accompanying destruction and loss of life, and surrender or immediate escalation to a strategic exchange which involves not only the United States and the Soviet Union but, undoubtedly, the nations of Europe as well. These consequences need to be understood by European political leaders and by the European public.

Europeans should accept the doctrine more readily, because it renews the explicit link to the strategic nuclear forces of the United States. With ties clearly drawn the ambiguity of the present expression of the strategy is replaced by the certainty of the Alliance's response: the first rung on the ladder of escalation is by NATO's conventional and tactical nuclear forces in Europe, but the next and the ultimate deterrent is provided by LRTNF deployed in Europe, by US and UK strategic forces. In addition the doctrine should be more acceptable to the United States because of, I believe, a lower probability of escalation to the strategic level. This does have the makings of workable doctrine for NATO's use of tactical nuclear weapons, doctrine that the members of the Alliance can agree on, doctrine that is usable and militarily effective, meets the test of credibility, and enhances NATO's deterrent strategy.

ESCALATION AND ESCALATION CONTROL

Two questions remain: can escalation be controlled at the tactical nuclear level and what about the perceptions of the Soviet Union? Many laymen, statesmen, and nuclear strategists on both sides of the Atlantic believe "any substantial use of nuclear weapons by either ... [NATO or the Warsaw Pact] against the other's forces or territory would inevitably and rapidly lead to all-out urban-industrial attacks and consequent mutual destruction."²⁷ The same view appears frequently in Soviet military writings. Soviet doctrine excludes the possibility of using nuclear weapons in a controlled, escalatory fashion, or for war bargaining purposes, but it does acknowledge that local wars need not escalate automatically. The Soviets warn of this inevitableness if the nuclear powers are involved and nuclear weapons are used by one side or the other.²⁸

In contrast, the statement of NATO's flexible response strategy carries implicitly the concept of escalation control. NATO plans to meet aggression at a selected level and then, if required, deliberately escalate the conflict to make it so costly to an aggressor that the conflict can be terminated quickly on terms acceptable to the Alliance.²⁹ Many strategic analysts feel that limited and quite protracted nuclear exchanges are possible and that escalation can be controlled and a war terminated at less than an all-out level. Some visualize an escalation ladder with a series of discrete and clearly identifiable steps, where meaningful distinctions can be made in terms of several different measures of escalation: locations of targets attacked, types of delivery systems used, types of targets attacked, numbers of weapons used, timing of the attack, or warhead yield.³⁰

Because the "firebreak" between conventional warfare and nuclear warfare is so well defined, some feel any use of nuclear weapons, either tactical or strategic, which breaches the firebreak will be a fundamental change in the character of the conflict and will inevitably result in escalation to a central strategic exchange. Others argue that the differences in the

effects of conventional and nuclear explosives are so marked that breaching the firebreak would be readily detectable; although there are distinctions that can be made in the levels of tactical nuclear war, the uncertainties in such a conflict would make its limitation almost impossible.³¹

But some strategists argue that different levels of nuclear escalation can be controlled. In addition to the firebreak between conventional and nuclear warfare, firebreaks also exist between theater nuclear war and strategic nuclear war, and within theater nuclear war itself. Some of the constraints already mentioned distinguish the last: weapon yield, numbers of weapons used, targets attacked, ranges of weapon systems employed, and recognition of geographical boundaries.³²

For this last group of strategists, the distinctions between battlefield, medium-range, and long-range theater nuclear forces would provide firebreaks conducive to escalation control. The short range of BNF (0-100 kilometers) limits their use primarily to military targets in the immediate vicinity of the line of contact and in support of the tactical battle. The range of MRTNF (100-1,000 kilometers) permits their use against military and civilian targets throughout the territory of the non-Soviet Warsaw Pact nations.

But use of MRTNF does represent a definite escalation of the level of the conflict above the use of BNF, just as would the use of BNF relative to conventional forces. The introduction of LRTNF introduces something new. The range of the Pershing II and GLCM, as well as the range of those Poseidon missiles committed to NATO, permits these systems to strike targets in the Soviet Union. Any use of these weapons against such targets would represent an escalation of the conflict to the strategic level as far as the Soviet Union is concerned and could possibly trigger an immediate strategic response on the Soviets' part.³³

Two major firebreaks and one lesser firebreak exist which would contribute to effective escalation control. The first major firebreak is between conventional war and nuclear war. The second major firebreak is within nuclear war: between strikes

involving the territory of the nuclear powers (strategic and LRTNF) and strikes in support of the tactical battle, to include deep interdiction fires (the use of BNF and MRTNF). The lesser firebreak lies between the use of BNF and MRTNF and is further demarcated between those close-support and interdiction fires by BNF and MRTNF that are in support of the tactical battle and those deep interdiction fires by MRTNF that are against targets deep in non-Soviet Pact territory. Attempts to limit escalation with respect to these firebreaks should be successful. The major firebreaks, almost certainly; the lesser, somewhat less so.

Dominating the escalation contest. A major concern of NATO political authorities and military planners has been the determination of ways to restrain nuclear escalation once the nuclear threshold has been crossed. Clearly, escalation limits can be measured in terms of numbers, yield, and ranges of weapons used. But this still leaves the question of how to structure NATO's strategy to put a cap on the escalation and permit NATO to dominate an escalation contest with the Warsaw Pact.

A major problem lies, of course, in the uncertainty of the Soviet reaction. If the Warsaw Pact is superior in theater nuclear weapons, what would prevent them from dominating an escalation contest? A scenario can easily be postulated in which NATO's initial use of tactical nuclear weapons, consisting of some small weapons, delivered accurately against a limited number of military targets—and accompanied with messages before, during, and after the strike—would elicit a massive Soviet theater response. So much for the concept of escalation control, unless NATO could prevent such a reaction.³⁴

From the very start, escalation dominance by NATO should be predicated upon the willingness to play the strategic card: a declarative policy to escalate to the use of LRTNF strategic nuclear weapons and for attacks on the Soviet homeland in response to any use of nuclear weapons by the Warsaw Pact.

Some strategists would argue that this could not be a credible strategy: the Soviet Union would never agree to so limit its response. The Soviets would never launch an attack in Europe in which they were not prepared to go all the way to a strategic exchange in order to achieve their objectives. They might launch a conventional attack initially and attempt to fight conventionally in order to limit the possibility of damage to Soviet and non-Soviet Warsaw Pact territory. But, in response to any indication that NATO was about to "go nuclear," they would not hesitate to use nuclear weapons themselves, including the possibility of a preemptive strike against NATO's nuclear capability and other military and political targets.³⁵ Such a response by the Soviet Union, their willingness to risk a strategic exchange with NATO's nuclear powers, would undoubtedly be predicated on the belief that their vital interests were involved and that this dictated that the war be won at any cost.

This speculation leads to a question of whether similar arguments could be used by the Soviet Union to achieve escalation dominance over NATO: that is, a statement by the Soviet Union that any use of tactical nuclear weapons by the Alliance would result in a strategic counterstroke by the Soviet Union. If attacked by the Soviet Union and the Warsaw Pact, NATO's will to use the new strategy of flexible response would indicate its recognition of the existence of a fundamental challenge to its vital interests and its intention to fight in defense of those interests. Conventional forces would provide the first rung on the ladder of escalation. If conventional forces were insufficient, the European members of the Alliance would express their recognition of the challenge to their vital interests by their willingness to accept NATO's controlled, limited use of tactical nuclear weapons on their own territory. The United States and the United Kingdom would recognize the challenge to their vital interests by their readiness to provide the strategic nuclear guarantee.

NATO's flexible response strategy is a strategy of *limited flexibility*. It is not designed to cope with a ruthless Soviet will to win at any cost. That threat must be deterred by the ulti-

mate deterrent: the threat of the NATO nuclear powers to use strategic weapons against the territory of the Soviet Union. Implicitly, the NATO strategy is oriented toward certain types of aggression, such as inadvertent war or war resulting from a perception of relatively low risk by the Soviet Union when something less than its most vital interests is involved. Only in those cases could NATO hope to change the Soviet's cost-benefit calculation and achieve war termination on NATO's own terms.³⁶

How might the Soviets react to limited use of tactical nuclear weapons by the Alliance, backed by the declared intent of the Alliance to escalate to the strategic level if required? NATO's first use in support of the tactical battle would not be a wildly implausible response to a Warsaw Pact attack, especially if these capabilities were in the hands of and executed on the territory of the countries threatened. No one could be entirely certain that potential Soviet responses would be deterred. The Soviets are more likely, however, to be impressed by usable Western capabilities than by suicidal ones. The Soviets have exhibited a pattern of prudent behavior in crises and would have their own incentives to restrain their response in the face of the US strategic threat to their own continued existence.³⁷

NATO's constrained use of tactical nuclear weapons to save a conventional defense would, in the face of what the leaders of the Soviet Union knew to be a limited objective attack, symbolize the extent to which the members of the Alliance felt their vital interests threatened. In such a situation, the leaders of the Soviet Union, faced with the threat of the potential destruction of the Soviet state, could retreat from confrontation in order to preserve the existence of the state. The latter would be imperative, for without the continued existence of the state there would be nothing to ensure the eventual triumph of communism over capitalism. To risk the destruction of the Soviet state would risk "their 'staatspolitik,' that complex web of interests, perceptions and ideals which ... determine the use of military power."³⁸

3. TO IMPLEMENT A STRATEGY

To the extent that we have deterrence it must be based upon a credible course of action and if it is no longer a credible course of action, then deterrence disappears.

—James R. Schlesinger,
Nuclear Weapons and Foreign Policy

NATO does not need a new strategy to replace the strategy of flexible response. But the Alliance does need a restatement of that strategy that will increase the credibility of its deterrent. To increase that credibility, ambiguities about the use of theater nuclear weapons must be resolved. Conditions regarding the first use of theater nuclear weapons by NATO need to be clarified.

Battlefield nuclear weapons and medium-range theater nuclear weapons can reinforce NATO's conventional defenses and deny the capability of the Warsaw Pact to accomplish its objectives with conventional forces. Explicit linkage to the threat of use of NATO's strategic nuclear forces and long-range theater nuclear forces against the territory of the Soviet Union also denies the Soviet Union a rational impetus for using its theater weapons in support of a Warsaw Pact conventional attack. Thusly, NATO's tactical nuclear forces can

be used effectively and escalation of the conflict limited, but only if these forces are backed explicitly by the deterrent of a higher level of escalation—the use of NATO's central strategic forces.

Inducing escalation restraint presupposes, among other things, enhancing the survivability of NATO theater nuclear forces, augmenting their capability for militarily effective use, and backstopping them with strategic forces capable of raising the threshold of use of Soviet strategic forces.¹

To implement the strategy requires some significant emphases for US and other NATO forces. The objective is development of a NATO deterrent force which shares the responsibilities, costs, and risks among the members of the Alliance; raises the nuclear threshold through the increased capability of conventional forces; poses no threat of a protracted conventional conflict in Western Europe; places a cap on escalation in favor of the Alliance; and deters escalation to the strategic level. It is a force which also achieves NATO's objectives and permits termination of a conflict on terms acceptable to the members of the Alliance; provides maximum freedom of action to the Alliance and limits options open to the Warsaw Pact; and enhances NATO's deterrence by providing a credible capability for a successful defense against a Warsaw Pact attack in Western Europe. To implement the strategy NATO's strategic, conventional, and theater nuclear forces—and the doctrine for their use—require improvements.

STRATEGIC FORCES

Strategic programs and requirements will not be examined in detail. However, a number of US programs, such as B-1 and Stealth bombers, MX, Trident D-5, and air-launched cruise missiles, that will enhance US strategic forces are either underway or being considered.

The critical issue with regard to the strategic deterrent is the capability to survive a first strike by Soviet strategic forces

and then retaliate against the aggressor.² What this capability concept presupposes is the ability to maintain a secure reserve and then employ that reserve. For the latter, survivable command, control, and communications are required. For the former, the United States has considered several options, all of which involve maintaining the US strategic triad and increasing the survivability of each of its elements. Those initiatives that also have the connotation of the ability to execute a first strike will be inherently destabilizing. From this perspective bomber forces, air-launched cruise missiles, and submarine-launched ballistic missiles are the elements of strategic forces that can contribute most effectively to stabilized strategic nuclear deterrence.

CONVENTIONAL FORCES

The capability of the conventional forces of the Alliance has improved significantly. Ongoing programs for improved weapons systems (M-1 and Leopard II tanks, new infantry fighting vehicles, the advanced attack helicopter, etc.) promise further improvements. However, these are programs that represent capabilities which trade off US and NATO forces against Soviet and Warsaw Pact forces on a one-for-one basis. Intrinsically, they require NATO's forces to match those of the Warsaw Pact.

What is apparent is that the Alliance must use its superior technological capability over the Soviet Union and the Pact to multiply the effectiveness of its forces. Additional emphasis should be given to what is already being done in the area of microelectronics and what this portends for precision-guided weapon systems.

There are areas for immediate application: development and proliferation of this technology is needed in direct-fire weapon systems and in fire-support weapons systems. Target acquisition is critical—the Alliance must be able to see what is happening on the other side of the hill and throughout the depth of the battlefield. This equates to an ability to anticipate and interdict advancing Pact forces. In the direct-fire battle,

kill probabilities need to increase, as does the survivability of the weapons systems operators so that they can destroy their targets and "live to fight another day." The Tank Breaker system being developed by the Defense Advanced Research Projects Agency and the Army's Missile Command represents the state of the art in what a direct-fire weapons system could be: a lightweight, "fire and forget" system in which the operator acquires the target, pulls the trigger, and then is able to take whatever evasive action may be desired. The missile automatically homes on the target at its most vulnerable spot (through the thinner top armor of a tank, for instance) to achieve a catastrophic kill at ranges comparable to or in excess of those of the tank gun system.³

In the indirect-fire battle, the capability to suppress and destroy the enemy's own direct-fire and indirect-fire systems is needed. Ongoing programs, such as the multiple-launch rocket system (MLRS), are aimed in this direction but indirect-fire systems also need the ability to kill hard targets. The Army's Copperhead, a cannon-launched, laser-guided projectile, is a step in the right direction, as are comparable Air Force and Navy development programs. However, these systems still require commitment of a forward observer or laser operator on a one on one basis against the target being engaged. Indirect-fire weapons systems that can autonomously guide to and kill armored vehicles need to be proliferated.

A mortar-launched, terminal-homing, armor-defeating projectile is within the state of the art and would use technology developed in the DOD Assault Breaker program. That same technology could be incorporated in cannon artillery projectiles capable of ranges in excess of 50 kilometers. Admittedly, initial target acquisition would still be a problem, but systems for remotely piloted vehicles and airborne radars provide the capability for acquiring targets out of ground line of sight. Also to this end, improved target acquisition will require a data processing and transmission system which promptly provides target information to firing units.

Even with improved target acquisition, data processing, communications, and warhead effectiveness, conventional-force improvements discussed to this point are one on one systems. A number of fire-support systems on the battlefield—mortars, cannon artillery, rockets, missiles, and aircraft—also engage targets on a similar one on one basis.

However, the real payoff in force effectiveness occurs when a single weapons system can engage multiple targets simultaneously. The multiple-launch rocket system equipped with a warhead containing several terminally homing submunitions would provide this sort of capability. The Air Force's Wide Area Antiarmor Munitions System (WAAM) program and the DARPA-Army-Air Force Assault Breaker program would provide similar capabilities at much greater ranges. The latter is a technology development and demonstration program which has been the carrier for development of much of the indirect-fire precision-guided munitions technology. Such systems with ranges extending in excess of 100 kilometers forward of the line of contact (and which permit a single missile to engage the equivalent of a tank company and achieve a high kill probability) would permit NATO's forces to interdict and destroy advancing enemy forces and slow the rate at which surviving enemy forces could reach the line of contact.⁴ With this capability NATO could use conventional weapons to attack many of the targets encountered in the Warsaw Pact attack formations that heretofore might have required the use of tactical nuclear weapons.

NUCLEAR WEAPONS REQUIREMENTS

The improved conventional-force capabilities which could be provided notwithstanding, the attack of some targets will require the use of nuclear weapons. There will remain instances in which either the area of the target is so large that it cannot be attacked effectively with conventional weapons, or there are simply not enough conventional weapons available to attack the many targets available throughout the depth of the Pact force echelons. Under the circumstances, to use nuclear weapons effectively, NATO needs the ability to acquire

and deliver timely, accurate fires against both mobile and stationary targets. Again, target acquisition is key. And, just as with conventional forces, the myriad of target and intelligence information available at corps, division, and brigade must be integrated in real time and exchanged among the various headquarters. In turn the commander, maneuver units, and fire support units (field artillery, helicopter, or tactical air) must receive timely information about targets in order to attack with either conventional or nuclear munitions.

Command and control relates intimately, because the effective use of nuclear weapons requires abbreviated procedures for obtaining nuclear release authority. Presumably, automated intelligence systems should enhance the capability of the corps commander to interpret and anticipate the development of situations for which the use of nuclear weapons may be required. In addition political authorities, who will be involved in the decision to grant the authority for use of nuclear weapons, need to understand and be able to recognize in advance the conditions for which the use of nuclear weapons will be required. On the part of these authorities, this involvement means participation during peacetime in war games and review of nuclear weapons employment plans. If political authorities have experienced realistic scenarios in which NATO forces would have to rely on nuclear weapons, during a conflict they will be able to recognize those conditions and make the decisions required to provide the authority for effective use of nuclear weapons.

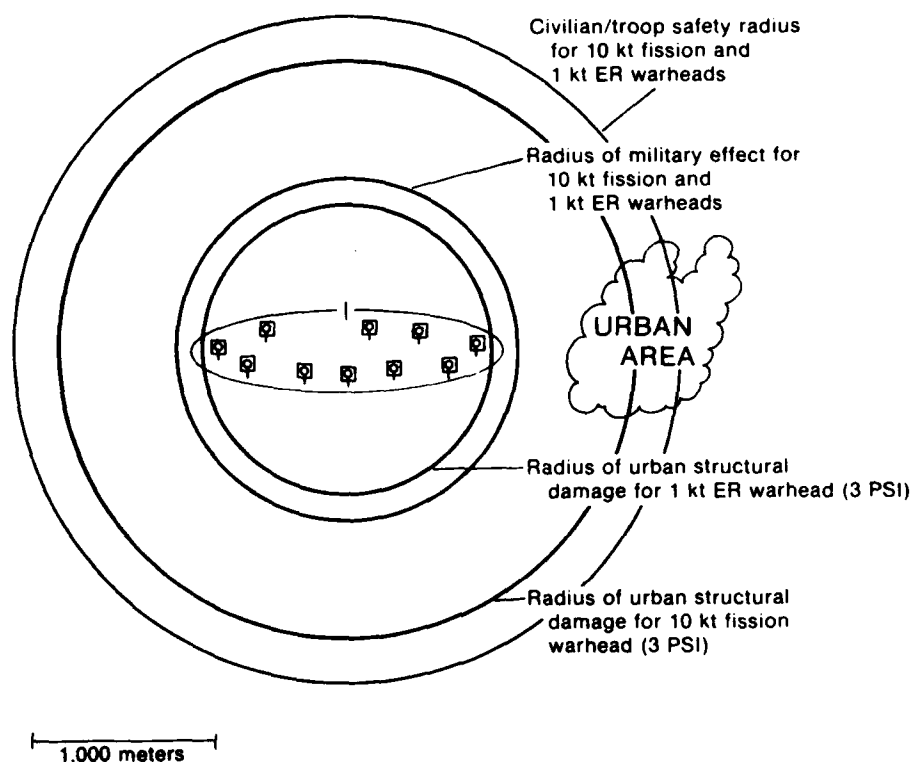
The flexible response strategy requires nuclear warheads that can be delivered accurately and at the time required. For the most part this is a function dependent not only on the command and control, target acquisition, and weapons delivery systems but also on the warhead itself. In addition maximum flexibility in warhead employment is needed, not so the weapons may be employed in large numbers throughout the extent of the battlefield, but so the weapons may be delivered discretely with the desired effect on military targets with minimum damage to the surrounding area. To this end NATO needs a limited stockpile of precise tactical nuclear warheads which

add to deterrence through improved capability for effective use on the battlefield, but which do not have the potential for devastating the population of Europe.⁵ Enhanced-radiation warheads can provide this capability.

Public aversion has been expressed towards these munitions, because they kill primarily with radiation. Yet, a fact often overlooked is that for the majority of tactical nuclear warheads, whether they are conventional fission warheads or the enhanced-radiation type, radiation is the dominant kill mechanism. Blast and thermal radiation contribute to target kill but actually have much more significant effects in terms of collateral damage to the surrounding area: trees blown down, buildings destroyed, flammable materials ignited, etc.

For comparison for bursts at relatively low altitudes (approximately 500 feet above ground level), an enhanced-radiation warhead "has about twice the ... radius [of military effectiveness] of an equal yield fission weapon and the same radius [of military effect] as a fission weapon of tenfold greater yield.... Urban structural damage radii [blast and thermal effects] for ER [enhanced-radiation] weapons are somewhat smaller than for equal yield fission weapons ... and very substantially less (50-60 percent) than for fission weapons having the same military effect" (figure 3-1). For bursts of intermediate height (approximately 1,500 feet) an enhanced-radiation "weapon's ... radius [of military effect] becomes substantially greater than that of a ... fission weapon [of the same yield] and the same as that of a ... fission weapon [of tenfold greater yield].... The urban damage radii for ER weapons are significantly smaller than those for a 1-KT fission weapon and greatly less than those for 10-KT fission weapons."⁶

Given the use of appropriate shielding measures by the civilian population who remain in the potential target area, that is if they take cover in basements behind sandbag or earthen barriers, enhanced-radiation warheads could achieve much more militarily significant effects with less collateral damage than could be achieved with ordinary fission warheads. In support of the tactical battle, coupled with the use of limited num-



Source: Data compiled from article by S. T. Cohen, "Enhanced Radiation Warheads: Setting the Record Straight," *Strategic Review* (Winter 1978), p. 12.

Figure 3-1. Comparison of 1-Kt. Enhanced Radiation and 10-Kt. Fission Warheads with Burst Height at 500 Feet above Ground

bers of the low and very low yield warheads which form a large component of the NATO stockpile, enhanced-radiation warhead use could reduce the level of civilian collateral damage to far below the levels of the Carte Blanche exercise of the late 1950s.⁷ There are also other tailored-effects warheads which could be used, such as suppressed radiation or earth penetrators, to achieve improved military effectiveness on targets while reducing the effects of collateral damage.

BATTLEFIELD NUCLEAR TACTICS

Design of suitable tactics for the battlefield employment of nuclear weapons has been very difficult for the Alliance. Many of the problems in this area stem from the uncertainty of political decisions and timely receipt of authority to use the weapons, although other problems stem from limitations of yield, accuracy, and range of the weapons stockpile deployed in Europe.

What any decision to use nuclear weapons on NATO territory must consider are the conflicting requirements of military efficiency and the avoidance of suicidal outcomes. In this regard the high vulnerability of the NATO Central Region is a dominant consideration. NATO defenses must prevent the development of a breakthrough by the forces of the Warsaw Pact and the penetration of Pact forces into the depths of NATO's dispositions. To do this NATO's forward corps must defeat the attacking first-echelon armies of the Pact, and NATO must interdict the advancing divisions, armies, and fronts of the Pact's follow-on echelons, before they can be committed to the battle.

If NATO's conventional forces are not sufficient to defeat the Warsaw Pact attack, NATO's tactical nuclear forces, BNF and LRTNF, must be used in conjunction with conventional forces to defeat the attack and terminate the conflict on terms acceptable to the Alliance.⁸

A TACTICAL EXAMPLE: THE FULDA GAP—198X

How tactical nuclear weapons might be used credibly and the contribution of conventional and strategic forces to the battle can be illustrated by a representative scenario.

Suppose, for example, in the late 1980s, world tensions heated to the point that the Soviet Union and the United States become involved in a face-to-face confrontation in Southwest Asia. Energy resources critical to the nations of the Warsaw Pact and the nations of NATO are the issue. The Soviet Union and the Warsaw Pact decide to divert Western attention from the Middle East and to do so launch limited-objective attacks in Western Europe. In addition to their intent to limit the ability of NATO to shift forces to the Arabian Gulf, the attacks are aimed at separating West Germany from the NATO Alliance and neutralizing forever any German potential for again making war on the Soviet Union or the nations of Eastern Europe.

The attack begins on 1 April 198X with border crossings along the full extent of the border between NATO and the Warsaw Pact countries.

In the tactical zone of the V (US) Corps, during the period of tension preceding the attack, the 3d (US) Armored Division and the remainder of V Corps deploy to their battle positions along the border. Additional US forces are en route from the continental United States to reinforce NATO but will not close on their prepositioned equipment and be available for commitment for at least 10 days.

At 0400 hours on 1 April, following massive conventional artillery and tactical air strikes, Pact forces cross the interzonal border in strength. The initial battle in the covering-force area is fierce and results in significant losses on both sides. Although NATO is able to inflict heavy losses upon both the first-echelon and second-echelon Warsaw Pact regiments with its improved precision-guided weapons systems,

its own forces are pushed back from their initial positions in the main battle area after a 3-day battle.

As the two Soviet divisions in the follow-on echelon approach the Fulda River and the penetration in the 3d Armored Division zone approaches 30 kilometers in depth, the NATO corps commander anticipates that the forward brigades of the 3d Armored Division might not be able to hold. He anticipates further that within the next 12 to 24 hours the situation may develop to the point that the attacking combined arms will be able to create a 20-kilometer hole in NATO's lines through which the tank army from the opposing front's follow-on echelon, now some 100 kilometers to the rear, can be committed for the race to the Rhine River.

The corps commander calculates, however, that with the forces available and limited use of tactical nuclear weapons, he can strike the flank of the enemy penetration before the tank army is committed. If his attack is successful, he estimates that the front cannot achieve its objective and will halt its attack for at least one week to regroup. This will give the forces deploying from the United States time to complete their deployment. For his attack to be successful, however, the corps' flanks will have to be protected. Consequently, in discussing the situation with the Central Army Group commander the corps commander requests that the Central Army Group interdict the advance of the tank army and that the corps be authorized to use a limited number of nuclear weapons to support the counterattack.

US and NATO military and political authorities anticipated the development of such a situation in war games prior to the conflict, and plans for the required nuclear weapons support were included in one of the contingency plans developed before the war and reviewed by both US and NATO authorities.

Based on the intelligence they are receiving from NATO's integrated intelligence system, US and NATO authorities anticipate the V Corps commander's request and are completing their political coordination when the request is

received from SHAPE. Release authority for the weapons to support the counterattack is granted in short order, but with a clear understanding by Allied political and military authorities of the possible consequences.

The corps commander launches his counterattack with a reinforced armored cavalry regiment against the flank of the X Guards Division. Conventional fires using NATO's greatly enhanced precision-guided weapon systems are employed in both direct and indirect fires against leading elements of the attacking forces to halt the forward elements in the penetration. A limited number of nuclear fires engage the more widely dispersed command and control elements of the attacking divisions, the division main and alternate command posts, to disrupt command and control of the attacking first echelon forces throughout and to defeat and disrupt severely the forces in the 5-kilometer zone of the flank of the penetration through which the corps counterattack was launched.

Again, nuclear fires are integrated with direct and indirect conventional fires to achieve maximum shock effect and thoroughly disrupt the enemy forces. Advanced precision-guided munitions, which permit the attack of tank company-sized targets through the haze of the battlefield, have a telling effect on the enemy and reduce the need for nuclear fires. Command posts and supporting installations of the divisions of the combined arms army's follow-on echelon are also attacked with nuclear and conventional fires. Simultaneously the Central Army Group and 4th Tactical Air Force launch conventional and nuclear strikes against the following tank army and severely disrupt its advance, throwing its command and control into chaos. Again, the improved effectiveness of NATO's new classes of nuclear warheads achieves a high level of military effectiveness. The reduced collateral damage of these warheads couples with the West German civil defense program and keeps civilian casualties relatively low.

The attack of the US 11th Armored Cavalry Regiment reinforced by the VI German Panzer Brigade is successful. Forces in the penetration were defeated, destroyed, or cap-

tured, or they withdrew to reconsolidate and reorganize. The NATO line forward of Highway 8 is restored and V Corps reconsolidates its position along the interzonal border.

The Army group commander receives word that high-level discussions are taking place between Pact and NATO authorities relative to a cessation of hostilities. Throughout the period he had been advised by SHAPE of continuing communications between the United States and the Soviet Union over the Washington-Moscow hotline and knew that the United States threatened to escalate to strategic nuclear weapons if the Pact responded to NATO's use of tactical nuclear weapons with theater nuclear weapons of their own.

The scenario may be simplistic (to say the least) and like many scenarios it assumes the success of the NATO attack, but it is designed to show a possible means of limited employment of tactical nuclear weapons to achieve NATO's objectives. Principally, the objectives are to augment conventional forces and halt the attack, to augment conventional forces and support a counterattack by NATO forces to restore NATO territory; and to augment NATO's conventional forces to halt the advance of those forces from the follow-on echelons whose successful advance might result in NATO's loss of the battle. Throughout the battle, strategic forces provided the ultimate deterrent to use of Pact and Soviet Union theater and strategic nuclear forces.

A COHERENT STRATEGY FOR THE 1980s

Would a restatement of NATO's strategy of flexible response which clarified conditions for initial use of tactical nuclear forces provide a more effective deterrent to Soviet and Warsaw Pact aggression in Western Europe? I believe it would. Certainly, the proposed restatement of flexible response explicitly linking conventional and tactical nuclear forces to strategic forces would be a more effective deterrent than what now exists.

Should deterrence fail, any decision on the part of NATO to use nuclear weapons would be most serious. A decision to authorize the use of conventional fission warheads,

enhanced-radiation warheads, tactical nuclear weapons, or strategic nuclear weapons will be no less difficult under the revised strategy than under the previous statement of that strategy. The gravity of such a decision has been repeatedly emphasized by both US and European political leaders. However, the failure to make that decision may be even more critical. A situation may result which requires a much higher level of escalation or surrender by NATO, or we may face a situation wherein the leaders of the Soviet Union themselves make a decision to use tactical or strategic nuclear weapons if they doubt NATO's will to respond.

These alternatives must be understood by the member nations of the Alliance, by their political leaders, and by their people. They all must recognize the relative condition of NATO's deterrent forces and the potential threat posed by the increase in the conventional and nuclear forces of the Soviet Union. Their security is based upon deterring conflict with the Warsaw Pact. This is a deterrence, however, which can be successful only if backed by the clear capability and intent of the Alliance to defend its interests. To succeed, NATO must have strong conventional, theater nuclear, and strategic nuclear forces; the will to use these forces; and agreement on their use.

As NATO increases its capability for deterrence and defense, the leaders of the Alliance can expect a massive propaganda campaign from the Soviet Union that will emphasize NATO's preparation for war. The members of the Alliance must rebut the Soviet effort with their own. NATO has never invaded a sovereign state, nor will it do so. The unimpeachable principle of the Alliance is to respond to, not to initiate, aggression. To be able to respond, NATO must be able to defend. Thus the Alliance will maintain those forces required to ensure its defense and deter conflict, but it should stand always ready to negotiate equitable arms reductions which guarantee the security of Europe.

For the NATO Alliance to succeed in the 1980s, there must be no doubt in its fundamental solidarity and adherence

to a commonly accepted strategy. The will of the West to use its power (both economic and military) to preserve its interests must be unquestioned. From that unquestioned will and from a clearly stated and clearly understood strategy and capability for the use of its forces will come the credible deterrence that NATO seeks—a coherent strategy for the 1980s.

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GLOSSARY

SELECTED ACRONYMS

ALCM	air-launched cruise missile
BNF	battlefield theater nuclear forces
C ³	command, control, and communications
DARPA	Defense Advanced Research Projects Agency
FLOT	forward line of own troops
GLCM	ground-launched cruise missile
ICBM	intercontinental ballistic missile
IRBM	intermediate-range ballistic missile
KT	kiloton
LRTNF	Long-Range Theater Nuclear Force
LTDP	Long-Term Defense Plan
MIRV	multiple independently targeted re-entry vehicle
MLRS	multiple-launch rocket system
MRTNF	medium-range theater nuclear force
SALT	Strategic Arms Limitation Talks
SHAPE	Supreme Headquarters, Allied Powers in Europe
START	Strategic Arms Reduction Talks
TRADOC	US Army Training and Doctrine Command
WAAM	Wide-Area Antiarmor Munitions System

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